

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

(The Mining Journal is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.)

No. 2186.—Vol. XLVII.

LONDON, SATURDAY, JULY 14, 1877.

WITH SUPPLEMENT. PRICE SIXPENCE. PER ANNUM, BY POST, £1 4s.

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER,
AND MINING SHARE DEALER.
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.
ESTABLISHED 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Banks, Bonds (Foreign and Colonial), Railways, Miscellaneous, Insurance, Assurance, Telegraph, Shipping, Canal, Gas, Water, and Dock Shares.

BUSINESS negotiated in Stocks and Shares not having a general market value.

BUSINESS in COLLIERY and IRON Shares, and in the principal WAGON and MANUFACTURING COMPANIES of the NORTH of ENGLAND and SCOTLAND.

BUSINESS in all the principal COTTON SPINNING SHARES.

Mr. J. H. CROFTS, having now established CORRESPONDING AGENCIES in all the CHIEF TOWNS of the United Kingdom, is prepared to deal in the various LOCAL Stocks and Shares at close market prices.

ACCOUNTS FOR THE FORTNIGHTLY SETTLEMENT.

A Daily Price List, issued at 5 P.M., giving latest Quotations up to close of Market—4.30 P.M. Also, on the 1st of every month a List of all Securities currently dealt in upon the Mining and Stock Exchanges, with latest prices, current dividends, rate of interest yielded at market price, &c.

MINES INSPECTED.

BANKERS: CITY BANK, LONDON; SOUTH CORNWALL BANK, ST. AUSTELL.

SPECIAL DEALINGS in the following, or part:—

10 Argentine, £4½.	10 East Van, £5½.	50 Pestarena, 3s. 9d.
10 Asheton, 23s. 9d.	20 Eberhardt, £6½.	20 Parys Mount, 12s.
20 Aberdaunt, 12s. 6d.	25 Flagstaff, £2½.	25 Penrith, 6s.
20 Bampfyde, £2 15s.	25 Glyn, 8s.	25 Penrith, 6s.
20 Chapel House, £2½.	20 Holmshurst, £1 10s.	15 Roman Gravel, £9½.
2 Clementina, 9s.	10 Hultafall, 10s.	50 Rookhope, 21s.
10 Chontales, 9s.	50 Javali, 8s.	10 St. Harmon, £2½.
10 Cakemore, £2½.	15 Llanrwst, £2½.	10 Tankerville, £7½.
20 Combarbin, 7s. 6d.	10 Leadhills, 10s.	25 Van Consoles, 9s.
20 Condes of Chili, £3½.	20 Marke Valley, 27s. 6d.	10 W. Tankerville, 21s.
5 D'Essey, £2 0.	35 North Laxey, 18s. 9d.	20 W. Wye Valley, £3½.
5 Exchequer, 7s. 6d.	20 Pateley Bridge, £2.	

* * * HULTAFALL LEAD.—SPECIAL BUSINESS at close prices.

BUSINESS also on hand in—Bodidris, Belstone, Cesena Sulphur, Cedar Creek, Cargill, Denbighshire, East Craven Moor, Gorse and Merilyn, Grogwin, Lisburne, Last Chance, Llangan, Minera, Medlyn Moor, New Zealand Kapanga, Oskham Collieries, Pennant, Pandora, Port Phillip, Plymington, Santa Barbara, South Aurora, St. Harmon, Tecoma, Wheel Newton, Wye Valley, West Wye Valley.

* * * SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS) ON DEPOSIT OF TWENTY PER CENT.

FOREIGN BONDS.—ARGENTINE.—EGYPTIAN.—RUSSIAN, TURKISH, SPANISH, PERU.

RAILWAYS.—HOME AND FOREIGN.

SPECIAL BUSINESS in the above, and Fortnightly Accounts opened on receipt of the usual cover.

* * * THE WAR.—The latest Telegrams from the SEAT OF WAR are received throughout the day, and also the course of the Markets from EVERY CONTINENTAL SOURCE.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

AQUARIUM, HOTEL, INSURANCE, AND MISCELLANEOUS SHARES.

SPECIAL BUSINESS in Brighton Aquarium, Royal Westminster Aquarium, Yarmouth Aquarium, Crystal Palace Aquarium, Milner's Safe, Telegraph Construction, Royal Insurance, Positive Assurance, Credit Foncier, Land Mortgage Bank of India, J. P. Westhead and Co., Palmer's Shipbuilding, Newcastle Chemical, Lawes Chemical, and others.

* * * BUSINESS TRANSACTIONS in all MISCELLANEOUS SHARES (of whatever description) HAVING LONDON OR COUNTRY MARKET VALUES.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

BRITISH LEAD SHARES.—BUSINESS in all leading Market

Mines and Latest Special Information from the various districts.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

COTTON SPINNING SHARES.—BUSINESS in all OLDHAM

SHARES, and in those of other DISTRICTS.

* * * SPECIAL BUSINESS in the following SELECTED SHARES:—

Name of Mill.	Last four dividends, per cent.	Closing quotations, July 13.	Buyers.	Sellers.
Central	25, 20, 10, 10	25, 20, 10, 10	25, 20, 10, 10	25, 20, 10, 10
Greenacres	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15
Green Lane	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15
Oldham Twist	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15
Royston	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15
Shaw	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15	30, 20, 5, 15
Star	25, 20, 10, 10	25, 20, 10, 10	25, 20, 10, 10	25, 20, 10, 10
Windsor	25, 20, 10, 10	25, 20, 10, 10	25, 20, 10, 10	25, 20, 10, 10

NOTE.—The shares of good Cotton Spinning Companies pay remunerative dividends, the mills being almost entirely conducted on the Co-operative system, under the limited Liability Acts. With a revival in trade the present rate of dividends would be augmented.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

BANKERS: City Bank, London; South Cornwall Bank, St. Austell.

ESTABLISHED 1842.

MR. WILLIAM H. BUMPUS,

STOCK AND SHARE BROKER,

44, THREADNEEDLE STREET, LONDON, E.C.

[Established 1867.]

SPECIAL BUSINESS, at close prices, in the SHARES of all the principal

HOME and FOREIGN MINES.

Shareholders, intending investors, and others who may be desirous of obtaining

information and advice as to operations at the present time are requested to com-

municate.

FOR SALE, at prices annexed:—

25 Argentine, £4½.	10 Frontino, £2 10s. 3d.	60 North Laxey, 18s. 9d.
10 Almada, 6s. 3d.	20 Gorse and Merilyn, 12s.	25 Parys Mount, 12s.
10 Aberdaunt, 12s. 6d.	25 Glyn, 8s. 9d.	100 Rookhope, 21s. 6d.
10 Asheton, 23s. 9d.	25 Glenroy, 10s.	20 Richmond, £2 11s. 3d.
10 Blue Tent, 9s.	50 Hingston, 8s. 9d.	25 Roman Gravel, £9½.
20 Cedar Creek, 11s. 6d.	15 Hultafall, 10s.	40 San Pedro, 14s.
10 Chontales, 9s.	75 Llanrwst, £2½.	75 South Aurora, 4s. 9d.
10 Condes of Chili, £3½.	75 L. X. L., 9s. 6d.	10 South Condurrow, 10s.
10 Derwent, £2½.	40 Javali, 8s. 6d.	5 Tankerville, £7½.
10 Devon Consols, 9s.	25 Kapanga, £2 6s. 3d.	2 Tincroft, £14½.
10 Don Pedro, 9s. 6d.	20 Leadhills, £2 10s. 3d.	20 United Mexican, 36s.
10 East Van, £5½.	40 Last Chance, 15s. 6d.	10 Van, £34½.
10 Exchequer, 7s. 6d.	20 Marke Valley, 27s.	25 Van Consoles, 9s.
10 East Caradon, 10s.	15 New Quebrada, 42s.	30 Wheel Grenville, 10s.
10 Eberhardt, £6 11s. 3d.	30 Monydd Gorrdu, 41s.	25 West Tankerville, 21s.

WILLIAM HENRY BUMPUS, SWORN BROKER.

Offices: 44, Threadneedle Street, London, E.C.

Business transacted in Stock Exchange Securities and Miscellaneous shares of every description. Fortnightly accounts opened. References given and required when necessary. A Stock and Share List forwarded free on application.

BANKERS.—THE NATIONAL PROVINCIAL BANK OF ENGLAND, E.C.

IMPORTANT.

THE HULTAFALL MINING COMPANY (LIMITED).

Full particulars of this valuable property, with copy of Report on same by Capt. R. Southey, of West Chiverton Mine, may be obtained on application to Mr. W. H. Bumpus, who has Special Business in the Shares.

All who have money to invest should secure an interest in this company at once.

The shares are certain to have a great rise.

44, Threadneedle Street, London, E.C.

MESSRS. PETER WATSON AND CO.,
54, OLD BROAD STREET, LONDON, E.C.

BUSINESS IN STOCKS AND SHARES.

RAILWAYS, BANKS, DIVIDEND LEAD MINES, &c.

BANKERS: THE ALLIANCE BANK (LIMITED).

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MR. ALFRED E. COOKE,
STOCK AND SHARE DEALER,
76, OLD BROAD STREET, LONDON, E.C.
ESTABLISHED 1853.

Business transacted at NET PRICES in CONSOLS, ENGLISH RAILWAYS,

BANKS, FOREIGN STOCKS, TELEGRAPHS, & MISCELLANEOUS SHARES.

SPECULATIVE ACCOUNTS opened on receipt of cover in

RAILWAYS and FOREIGN STOCKS.

PURCHASERS OF MINING SHARES should apply to Mr. COOKE, who can

always supply at LOWEST PRICE NET.

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ALFRED E. COOKE, 76, OLD BROAD STREET, LONDON.

ESTABLISHED 1853.

MR. JAMES STOCKER, STOCK AND SHARE BROKER,

AND MINING SHARE DEALER,

2, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.

[Established 1848.]

BUSINESS transacted in all kinds of STOCK EXCHANGE SECURITIES

also in every description of BRITISH and FOREIGN MINING, COLLIERY

MANUFACTURING, and other SHARES.

SPECIAL BUSINESS in the following:—

Aberdaunt, 12s. 6d.	Hultafall, 10s.	Parys Mountain, 11s. 6d.
Asheton, 23s. 9d.	Leadhills, £2½.	Rookhope, 21s.
Chapel House, £2½.	Ladywell, 20s.	Roman Gravel, £9½.
Combarbin, 7s. 6d.	Llanrwst, 48s.	So. Roman Gravel, 11s.
Devon Consols, £4½.	Monydd Gorrdu, 41s.	Tankerville, £7½.
East Van, £5½.	North Laxey, 18s. 9d.	Thorpe's Gawber, £3½.
Grogwin, 10s.	Plymington, 6s.	Van Consoles, 9s.
Great Laxey, £20½.	Pateley Bridge, 33s.	West Tankerville, 19s.
Glenroy, 21s.	Penrith, 2s. 6d.	West Chiverton, £15½.
Glyn, 7s. 3d.	Penrith, 6s.	Wheel Grenville, £1½.
Argentine, £4½.	Pandora, 10s.	West Wye Valley, 10s.
Asheton, 23s. 9d.	Exchequer, 7s. 6d.	New Quebrada, 37s. 6d.
Condes of Chili, 48s.	Flagstaff, £3 3s. 9d.	Port Phillip, 10s. 6d.
Chicago, 45s.	Frontino, £2½.	Richmond, £2½.
Chontales, 9s. 6d.	I. X. L., 9s. 6d.	San Pedro, 42s.
Don Pedro, 9s. 6d.	Javali, 8s. 9d.	South Aurora, 4s. 9d.
Eberhardt, £6 11s. 3d.	Last Chance, 15s. 6d.	Tecoma, 7s. 6d.
	N. Zealand Kap., 47s. 6d.	United Mexican, 36s.

JAMES STOCKER, SWORN BROKER.

Consols, Foreign Bonds, Railways, Bank, Telegraph, Gas, and all miscellaneous Shares bought and sold, and fortnightly accounts opened for same. Shares sold for forward delivery on receipt of cover. List of prices and every information forwarded on application. References given and required when necessary.

BANKERS: LONDON AND WESTMINSTER.

MR. T. E. W. THOMAS, SHARE BROKER,

3, GREAT WINCHESTER STREET BUILDINGS, E.C.

ESTABLISHED 1857.

The following are the latest prices at which business could be done. Where the

difference between the buying and selling price is wide transactions may be

effected at an intermediate price:—

Buyers.	Sellers.	Buyers.	Sellers.
Aberdaunt, 12s. 6d.	15s.	North Laxey, 18s. 9d.	20s.
Argentine, £4½.	£4 10s.	New Quebrada, 37s. 6d.	£2 10s.
Asheton, 23s. 9d.	£4 10s.	New Zealand Kapanga, 47s. 6d.	£2 10s.
Bodidris, 12s. 6d.	15s.	Parys Mountain, 11s. 6d.	12s. 6d.
Bodidris, 12s. 6d.	15s.	Pateley Bridge, 33s.	15s.
Devon Consols, £4½.	4s. 10s.	Penrith, 2s. 6d.	5s. 6d.
Dolcoath, 28s.	30s.	Penrith, 6s.	5s. 6d.
Don Pedro, 9s. 6d.	11s.	Richmond, 6s.	6s.
Eberhardt, £6 11s. 3d.	6s. 7d.	Roman Gravel, 9s.	9s.
East Caradon, 10s.	16s.	Rookhope, 21s.	21s.
East Van, 5s. 6d.	5s. 6d.	San Pedro, 42s.	42s.
Exchequer Gold, 7s. 6d.	8s.	South Condurrow, 10s.	10s.
Flagstaff, £3 3s. 9d.	3s. 8d.	Tankerville, 7s. 6d.	7s. 6d.
Glenroy, 21s.	1s. 10d.	Tincroft, 12s.	14s.
Glyn, 7s. 3d.	10s.	Van Consoles, 9s.	9s.
Great Laxey, 20s.	21s.	Van Consoles, 9s.	10s.
Javali, 8s. 9d.	9s.	West Asheton, 19s.	19s.
Last Chance, 15s. 6d.	15s.	West Chiverton, 14s.	16s.
Ladywell, 20s.	21s.	West Tankerville, 19s.	19s.
Leadhills, £2½.	2½.	W. Grenville (call pd.), 1½.	1½.
Marke Valley, 1s. 10d.	1½.		

SPECIAL BUSINESS in Aberdaunt, Llanrwst, Rookhope, North Laxey, and Gorse and Merilyn. The latter mine is now extraordinarily rich in lead ore. The shares, already 51 tons per month, are about to be materially increased. Holders will have immediate and good dividends.

MESSRS. GREGORY, WHITAKER, AND CO.,

STOCK AND SHARE DEALERS,

81, BISHOPSGATE STREET WITHIN, LONDON.

Beg to notify to their clients and investors generally that Shares offered in the LLANRWST LEAD MINE at low prices, through the medium of this Journal, are rarely, if ever, delivered to the Buyer. To ensure the delivery of Shares bought, purchasers are cautioned to pay cash only on the delivery of transfers, accompanied by the holders' certificates.

MESSRS. HARLAND AND CO., STOCK AND SHARE

DEALERS, 38, GREAT ST. HELEN'S, BISHOPSGATE STREET

WITHIN, LONDON, E.C.

WILLIAM B. COBB, STOCK AND SHARE DEALER,

62, CORNHILL, LONDON, E.C.

Business transacted in every description of British and Foreign Stocks, Mining

Shares, &c. Fortnightly accounts opened upon receipt of usual cover.

The following Shares are strongly recommended for a rise of 10s. to 100 per cent.

upon present price:—Court Grange (Lead), North Laxey, Javali, and Rookhope

BANKERS: The Alliance Bank (Limited).

MR. THOMAS THOMPSON, JUN., STOCK AND

SHARE DEALER, AND MINING AGENT AND ACCOUNTANT,

1, PALMERSTON BUILDINGS, BISHOPSGATE STREET, LONDON, E.C.

MR. W. MARLBOROUGH, STOCK AND SHARE DEALER

29, BISHOPSGATE STREET, LONDON, E.C. (Established 20 Years),

can sell the following SHARES, at prices annexed:—

50 Aberdaunt, 12s. 6d.	40 Flagstaff, £2 10s. 3d.	50 Parys Mount, 12s. 6d.
100 Almada, 6s. 3d.	10 Fortuna, £5 11s. 3d.	25 Rookhope, 21s. 6d.
20 Alltair, 25s.	20 Gorse and Merilyn, 12s.	10 Roman Gravel, £9½.
60 Bodidris, £1 2s. 6d.	100 Great W. Van, 4s.	15 Richmond, £2½.
35 Colorado Tor., £1 16s.	15 Great Dylliffe, £2½.	40 Russia Copper, 39s. 3d.
25 Chicago, £2 3s. 9d.	30 Last Chance, 15s. 6d.	25 St. Harmon, £2½.
20 Cakemore, £2½.	25 Llanrwst, 48s.	10 So. Tolcarne (offer w.).
50 Combarbin, 7s. 6d.	20 Leadhills, £2 10s. 3d.	5 Tankerville, £7 9s. 9d.
100 Chontales, 9s. 6d.	20 Leadhills, £2 10s. 3d.	30 Tolima, 10s.
20 Derwent, £2½.	40 Malpas, 5s. 6d.	30 Van Consoles, 9s. 9d.
25 Devonport and Tiver-	30 Nth. Laxey, 19s. 6d.	5 W. Craven Moor, £10½.
ton Brewery, £14½.	20 Penrith, 2s. 6d.	40 W. Tankerville, 20s. 6d.
80 Don Pedro, 10s. 6d.	50 Penrith, 6s.	10 W. Wye Valley, £3 11s. 3d.
60 East Caradon, 10s. 6d.	60 Penrith, 6s. 6d.	10 West Goginan, 10s.
(call paid).	75 Pestarena, 3s. 9d.	60 Yorke Peninsula (or-
75 Exchequer, 7s. 6d.	60 Port Phillip, 10s. 6d.	dinary), 6s.
50 Frontino, £2 10s. 3d.		

MR. CHARLES THOMAS,
MINING AGENT, STOCK AND SHARE DEALER,
3, GREAT ST. HELEN'S, LONDON, E.C.

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&c.; Indian, American, and Colonial Stocks, &c.; Market Prices, Reports, &c.

The above Investment Circular is a Safe Guide to Investors.

GOULD SHARP AND CO., STOCK AND SHARE BROKERS,

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Established 1852. - Bankers: London and Westminster, Lothbury, E.C.

FERDINAND R. KIRK, STOCKBROKER,

5, BIRCHIN LANE, E.C.

HALF-YEARLY BRITISH MINING SHARE LIST, JANUARY TO JUNE, 1877.

SHOWING THE PRICES OF THE LONDON MARKET ON THE 1ST JANUARY, AND THE 30TH JUNE, 1877, AND THE LOWEST AND HIGHEST PRICE FOR THE SIX MONTHS JANUARY TO JUNE INCLUSIVE.

CONTRIBUTED BY Mr. EDWARD ASHMEAD, LONDON MINING AGENT AND ACCOUNTANT, 62, CORNHILL, LONDON, E.C.

THE FOLLOWING LIST EMBRACES THOSE MINES IN WHICH DURING THE PAST SIX MONTHS THERE HAVE BEEN FREQUENT DEALINGS AND CONSTANT QUOTATIONS, AND NOT THOSE IN WHICH THERE HAVE BEEN BUT FEW TRANSACTIONS AT LONG INTERVALS. IT MAY BE OBSERVED THAT SOME MINES ARE NOT INCLUDED, ARISING FROM THEIR SHARES BEING FIRMLY HELD, AND NO DEALINGS OR PRICES REPORTED. MINING SHARES HAVING THEIR TRANSACTIONS EXCLUSIVELY IN PROVINCIAL MARKETS WILL NOT BE FOUND IN THIS LIST.

MINE AND COUNTRY.	Mineral.	Shares.	Paid.	Price, Jan. 1, 1877.	January.		February.		March.		April.		May.		June.		Price, June 30, 1877.
					Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	
CORNWALL—WEST.																	
Agar, Wheal	Copper	6,000	£ s. d.	2½ to 3	2½	4	3	3½	3½	3½	3	3½	3½	4	3	3½	3 to 3½
Basset, West	Copper	6,000	5 13 4	4 4½	4	5	3½	5	3	4½	3	4	2½	4	1	2½	3 to 4
Basset, Wheal	Copper	512	19 2 6	12½ 17½	7½	17½	7½	12½	7½	12½	7½	12½	7½	12½	7½	12½	7½ to 12½
Cargill	Lead	3,348	6 6 0	4½ 5½	4½	5½	5	7	4½	6	3½	5	3½	4	3½	4	4 to 5
Carn Brea	Tin and copper	1,000	36 7 6	37½ 40	35	40	35	37½	34	37½	32	36	34	37	30	36	30 to 36
Carn Brea, South	Tin and copper	5,000	3 5 0	1 1½	1	1½	1	1½	1	1½	1	1½	1	1½	—	—	—
Cathedral	Tin and copper	15,000	1 10 0	1 1½	1	1½	1	1½	1	1½	1	1½	1	1½	—	—	—
Chiverton, West*	Lead and blende	3,000	12 10 0	18 19	18	19½	18	19½	17	19	16	17½	15	17	14	17	14 to 17
Coates, Wheal	Tin	6,000	2 0 0	1½ 2	1½	2	1½	2	1½	2	1½	2	1½	2	1½	2	1½ to 2
Condurrow, South*	Tin and copper	6,123	6 5 6	6½ 7½	6	7½	5½	6½	6	7½	6	7½	5	7	4	7½	4 to 7½
Cook's Kitchen	Tin	2,450	23 9 9	4½ 5	4	5	4	5	4	5	3	4	2	3	1	4	1 to 4
Croft, South Wheal	Copper	937	37 0 10	13 15	13	16	16	18	12	16	12	15	10	15	10	11	10 to 11
Dolcoath*	Tin, cop., arsen.	4,296	10 10 8	39 41	35	41	35	37½	34	37½	32	36	32	35	28	34	28 to 34
France, South Wheal	Copper	4,500	7 12 4	4 4½	4	4½	4	4½	4	4½	4	4½	4	4½	4	4½	4 to 4½
France, West Wheal	Tin	2,048	28 1 3	5½ 6	4½	6	3½	5	4	5	3½	4	2½	3	2	3	2 to 3
Godolphin, West	Tin	5,000	2 6 0	2½ 3½	2½	3½	2½	3½	2½	3	2½	3	2	3	2	3	2 to 3
Grenville, Wheal	Copper and tin.	5,179	12 18 6	1 1	1	1	1	1	1	1	1	1	1	1	1	1	1 to 1
Hendra, New	Tin	1,492	3 9 0	22s. 24s.	22s.	24s.	1	1½	1	1½	1	1½	1	1½	1	1½	1 to 1½
Kitty, Wheal (St. Agnes)	Tin	4,295	5 4 6	3½ 4	3	4	2½	3½	2	3	2	3	2	3	2	3	2 to 3
Peavor, Wheal	Tin	3,000	6 10 0	3 3½	2½	3½	2½	3½	2	3	2	3	2	3	2	3	2 to 3
Penryn, South	Tin and copper	45,793	2 0 0	11½ 12½	11	12½	10½	11½	10	11½	9½	11	9	10	9	10	9 to 10
Pool, East*	Tin and copper	6,400	0 9 9	11½ 12½	11	12½	10½	11½	10	11½	9½	11	9	10	9	10	9 to 10
Providence	Tin	1,120	21 6 7	1½ 2½	1½	2½	1½	2½	1½	2½	1½	2½	1½	2½	1½	2½	1½ to 2½
Reliance Consols	Copper	6,000	0 10 0	20 22	19½	21	19	20	18	21	16	19	16	18	14	17	14 to 17
Seton, West Wheal	Copper	600	47 0 0	32½ 35	25	34	27½	35	27½	35	30	35	30	32½	28	32½	28 to 32½
Tincroft*	Tin and copper	6,000	9 0 0	20 22	19½	21	19	20	18	21	16	19	16	18	14	17	14 to 17
Tolgus Consols	Copper	10,000	5 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tolgus, West Wheal*	Copper	512	95 10 0	62 64	60	64	59	63	59	62½	59	62½	58	62	60	62½	60 to 62½
Ung, Wheal	Tin	4,096	13 11 6	2½ 2½	2	2½	1½	2	1½	2	1½	2	1½	2	1	1½	1 to 1½
CORNWALL—EAST.																	
Caradon, East	Copper	6,144	2 14 6	1½ 1½	1	1½	1	1½	1	1½	1	1½	1	1½	1	1½	1 to 1½
Caradon, Glasgow*	Copper	40,000	1 0 0	110 130	110	130	110	130	110	130	110	130	110	130	110	130	110 to 130
Caradon, South*	Copper	512	1 5 0	110 130	110	130	110	130	110	130	110	130	110	130	110	130	110 to 130
Gunnislake (Clitters)*	Copper	9,830	2 2 0	2½ 2½	2	2½	2	2½	2	2½	2	2½	2	2½	2	2½	2 to 2½
Herodfoot	Lead	1,024	8 10 0	3 4	2½	4	2½	4	2½	4	2½	4	2½	4	2	4	2 to 4
Hingston Down	Copper	18,000	1 0 0	1½ 1½	1	1½	1	1½	1	1½	1	1½	1	1½	1	1½	1 to 1½
Marke Valley	Copper	9,000	4 6 0	1½ 1½	1	1½	1	1½	1	1½	1	1½	1	1½	1	1½	1 to 1½
Prince of Wales	Copper	12,800	2 2 0	3s. 5s.	—	7s. 6d.	—	6s.	—	7s. 6d.	—	5s.	—	6s.	—	7s. 6d.	— to 7s. 6d.
Trebeigh Consols	Lead	12,000	0 9 0	6s. 6d. 7s. 6d.	—	7s. 6d.	—	7s. 6d.	—	7s. 6d.	—	10s.	—	8s.	—	10s.	7s. 6d. to 10s.
DEVON.																	
Belford United	Copper	12,000	1 19 6	3 3½	—	—	—	—	—	—	—	—	—	—	—	—	—
Combmartin	Lead	6,000	0 6 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crebor, Wheal	Copper	6,000	4 1 0	2½ 3½	2½	3½	2½	3½	2½	3½	2	3½	2	3½	2	3½	2 to 3½
Devon Great Consols*	Cop., arsen., &c.	10,240	1 0 0	4½ 5	4	5	4	5	4	5	4	5	4	5	4	5	4 to 5
Gawton	Copper	3,950	4 3 6	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DURHAM.																	
Rookhope	Lead	15,000	1 10 0	1 1	1	1½	18s.	21s.	16s.	20s.	17s. 6d.	21s.	18s.	1½	1	1½	1 to 1½
YORKSHIRE.																	
Craven Moor, East	Lead	3,000	10 0 0	—	—	—	—	—	—	—	—	—	10	10½	10	10½	10 to 10½
Craven Moor, West	Lead	3,000	10 0 0	12½ 13½	12½	13½	12½	13½	12½	13½	12	13	11	13	11	13	11 to 13
Pateley Bridge	Lead	4,000	5 0 0	2½ 3	2½	3	2½	3	2½	3	2	3	2	3	2	3	2 to 3
Pateley Bridge, West	Lead	4,000	5 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
ditto, reconstituted...	Lead	20,000	1 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SHROPSHIRE.																	
Ladywell	Lead	12,000	2 10 0	1 1½	1	1½	1	1½	1	1½	1	1½	1	1½	1	1½	1 to 1½
Pennerley	Lead and blende	12,000	2 0 0	1½ 1½	—	—	—	—	—	—	—	—	—	—	—	—	—
Roman Gravel*	Lead and blende	12,000	7 10 0	13½ 14½	13½	14½	13½	14½	12½	14	12	13½	11½	10s.	10s.	10s.	10s. to 10s.
Roman Gravel, South	Lead	18,000	1 10 0	1 1	—	—	—	—	—	—	—	—	—	—	—	—	—
Tankerville*	Lead	12,000	6 0 0	8½ 9	8½	9	8½	9	8½	9	8	9	8	9	8	9	8 to 9
Tankerville, West	Lead and blende	12,000	3 0 0	1½ 2½	1½	2½	1½	2½	1½	2½	1½	2½	1½	2½	1½	2½	1½ to 2½
ANGLESEA.																	
Parys Mountain	Copper	16,923	3 0 0	9s. 11s.	9s.	11s.	14s.	7s.	11s.	5s.	10s.	4s.	10s.	7s.	12s.	10s. 12s.	10s. to 12s.
CARDIGAN.																	
Cwmystwith, South	Lead	6,000	2 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Goginar, West	Lead	12,000	2 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Grogwinion*	Lead	20,000	2 0 0	5 5½	5	5½	5	5½	5	5½	5	5½	5	5½	5	5½	5 to 5½
Monydd Gorrdu...	Lead	11,000	5 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Lisburne*	Lead	400	18 15 0	65 70	65	70	70	80	70	80	60	80	70	80	70	80	70 to 80
Red Rock	Lead	10,000	2 0 0	2 2½	2	2½	2	2½	2	2½	2	2½	2	2½	2	2½	2 to 2½
Van, Great West...	Lead	25,000	2 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CARNARVON.																	
Asheton	Lead	12,000	5 0 0	1½ 1½	1½	1½	1½	1½	1½	2	1½	2	1½	2	1	2	1 to 2
Asheton, West	Lead	12,000	1 0 0	1½ 1½	1½	1½	1½	1½	1½	2	1½	2	1½	2	1	2	1 to 2
Clementina	Lead	128	20 0 0	35 45	30	45	45	50	30	45	30	50	30	50	30	50	30 to 50
D'Eresby Mountain	Lead and blende	512	20 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Llanrwst	Lead	30,000	2 0 0	2 2½	1½	2½	1½	2	1½	2½	2	2½	2	2½	2	2½	2 to 2½
DENBIGH.																	
Minera*	Lead and blende	9,000	5 0 0	15 17	15	20	15	20	15	20	15	20	10	15	10	15	10 to 15
FLINT.																	
Gorsedd and Merilyn	Lead	6,000	2 10 0	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pennant*	Lead & barytes	6,000	5 0 0	5½ 6	5½	6	6	6	5½	6	5½	6	5½	6	5	6	5 to 6
St. Patrick	Lead	10,000	1 0 0	1 1½	1	1½	1	1½	1	1½	1	1½	1	1½	1	1½	1 to 1½
MONTGOMERY.																	
Aberdaunant	Lead	40,000	1 0 0	3½ 4	3½	4	3½	4	3½	4	3½	4	3½	4	3½	4	3½ to 4
Dyliffe, Great	Lead	15,000	4 0 0	3½ 4	3½	4	3½	4	3½	4	3½	4	3½	4	3½	4	3½ to 4
Glyn	Lead	10															

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. XXXIII.*

BY J. CLARK JEFFERSON, A.R.S.M., W.H. SC.,
Certificated Mining Engineer.(Formerly Student at the Royal Bergakademie, Clausthal).
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SECTION II.

PROSPECTING FOR MINERALS—BORING.

III.—THE BORING OPERATION.

At the salt mine Luisenthal, near Göttingen, a bore hole has been put down to a depth of 1200 ft. with the use of a rope. The motive power was obtained from a 10-horse power portable engine, and by means of belts and gearing could be applied for boring, sludging, &c. The drum round which the rope is coiled is provided with a hand brake. Over the mouth of the bore shaft a four-legged frame is placed, and strutted against the bore tower. On the top of the frame a pulley is fixed, which is driven from the engine by means of a belt. On the same axle a small spur wheel is fixed, which of a belt. On the second axle a disc is keyed, which line of the bore shaft. Lower down, and attached to the frame has a moveable crank pin. Two slide bars, between which a cross head slides up and down. The cross head is attached by the means of a connecting rod to the moveable crank pin in the disc. To a short rod from the cross head the lengthening screw is attached, and to and below this wooden clamps for holding the rope are fixed. The wooden clamps serve the purpose of holding the rope as it is paid out from the rope drum, which is done every time the rope has been lowered so far as possible by the lengthening screw. By making the crank pin moveable in the disc the lift of the tool can be altered at pleasure to suit the varying nature of the rock passed through.

The boring tool is of cast-steel, the blade being 1 in. thick, with cutters on the periphery 4 in. wide. The shaft fits into the lower end of the boring rod with a conical joint, where it is also cotted on. The boring rod, which is 20 ft. long, and weighs nearly 7 cwt., carries at about one-third of its length from the upper end a cap, on which rests an india rubber ring. The upper part of the rod is turned, and the guides to preserve it in a vertical direction slide on this portion, and rests also on the india rubber ring, which is to deaden the shocks to which the guides are constantly subjected. Near to the extreme upper end of the rod a hollow cylinder is attached with a cotter, and over this an india rubber ring is passed. The swivel to which the rope is attached is next passed over the end of the boring rod, which is screwed, and a nut is screwed on to the end of the rod, and to prevent its working loose a split pin is passed through the nut and rod. As under certain circumstances it becomes advisable to alter the pressure between the swivel and the india rubber ring, and as the nut (owing to the split pin passing through it and the rod) cannot be screwed down or up for this purpose, a steel washer is inserted between the nut and swivel, and between the washer and the swivel a second india rubber ring is also inserted. The pressure is altered by using washers of varying thickness. The rope, which is an iron wire rope, is 1 in. diameter, and consists of six strands (twisted to the right), each strand consisting of seven wires, 3 millimetres in diameter.

The rope used for sludging is $\frac{3}{4}$ in. wire-rope, and is coiled round a special drum. In commencing the boring operations the borer and rope are lowered into the bore hole by means of the brake on the winding drum, which can be put into and out of gear with the engine. When the borer has reached the bottom of the bore hole, and the lengthening screw is screwed up to its shortest length, and the cross head in its lowest position, the rope is then passed through the wooden clamp, which is tightened by four bolts and nuts, and the rope is further unciled from the drum, so as to leave sufficient slack for the up and down motion of the rope by means of the lengthening screw. After these details have been carried out the rope is lowered a little by means of a lengthening screw, so that the boring tool can strike the bottom with its whole weight. Every time the tool strikes the bottom of the bore hole the strain (due to the weight of the borer) is suddenly taken off the rope, and in consequence of the elasticity of the wires the rope tends to coil itself during the time that it is released from the weight of the rods, when the rope ascends, and again receives the weight of the borer, it tends to untwist. This gives rise to a reciprocating partial rotation of the swivel, first in one direction and then in the other. At the moment when the borer strikes the bottom of the bore hole, and the rope coils itself, the swivel, owing to the slight pressure with which it is held between the two india rubber washers, can rotate slightly with the rope without the borer (which rests on the bottom of the bore hole) towards the right. When the rope ascends and raises the borer, its weight causes a tendency in the wires to straighten themselves, thus untwisting the rope—i.e., rotating it slightly towards the left—and the weight of the borer occasions such a pressure between the swivel and the nut on the end of the borer that the friction, which is increased by the india rubber washer, causes the borer to partake of this motion to the left; hence after every blow the boring tool is rotated slightly towards the left. The india rubber washer, immediately beneath the swivel, is intended to regulate the amount of rotation of the borer. When the tool strikes the bottom of the bore hole, this india rubber washer prevents the whole of the pressure on the swivel being taken off, so that the rotation of the swivel to the right is prevented from taking place to the full extent that the coiling of the rope would cause were the swivel perfectly loose. All this is regulated by varying the thickness of the washers, and must be first ascertained by a few trials. The height of the lift amounts to about 2 ft., and 35 to 40 blows per minute is the extreme limit.*

The connection of the sludger with the rope is worthy of being specially noticed. Besides the ordinary swivel joint, which allows of rotation round a vertical line, there are two ordinary pin joints, with the pins at right angles to each other: this connection allows of a motion in any direction, and consequently tends greatly to preserve the rope where it is capped.

Herr Hochstrate, of the Rheinpreussen Colliery, has devised the following free falling rope borer, which, like Fabrian's instrument, consists essentially of two parts—a hollow (bored) cylinder, and a free falling piece (with two wings), which slides within the cylinder. In the cylinder are two long slits, placed diametrically opposite, and in these the wings of the free falling piece slide. The lower end of the free falling piece (which slides within the cylinder, and which is somewhat longer than the cylinder) is welded to a broad screw (which has been formed by twisting a long thick flat piece of iron), and this latter is cotted at its lower end, where it is turned cylindrical to a long heavy rod of iron, which is attached to give sufficient striking weight; and, lastly, a similar cotted joint connects this rod to the cutting tool. The upper end of the hollow cylinder is connected in a similar manner by a cotted joint, with a second broad screw, formed in the same manner as the first; the upper end of the screw terminates in a short round rod, to which the swivel is attached, the latter being connected directly with the flat hempen rope. Both screw blades have the same pitch, but the upper one is twisted from left to right, and makes one complete turn, the lower is twisted from right to left, and makes a turn and a half. Just above the cylinder, at the lower straight portion of the upper screw blade two semicircular lids, or halves, of a cap are hinged, and to the under side of each a leather strap is attached, which passes downwards to each of two short levers. Each lever is hinged between a steel plate, which is screwed on to the cylinder (near the upper end of each slit) and the cylinder itself. The pans on which the levers are hinged pass each through one of steel plates and screw into the cylinder. Where the levers are

attached to the pins they are rounded off eccentrically, in such a manner that when the lever ends are raised the rounded portion of the levers project half way into the slit; but when the levers fall, in consequence of the eccentricity of the lever where it is hinged on the pin, the lever does not project into the slit. Where the steel plates are attached the slits are enlarged to double their width, a flat ledge being filed on each of the steel plates, broad enough for the wings to rest upon. The side of each slit just above the ledge, or rather at a little more than the height of the wings above the ledge, is inclined, gradually narrowing the slit at the upper end to nearly the same width as the thickness of the wings. The steel plates, which are the most subject to wear at the ledges, can be unscrewed, and replaced or repaired. During the raising of the apparatus the wings rest upon the ledges, and consequently the free falling piece and borer are also raised, and during this time the pressure of the water above the cap keeps the two halves hung downwards, and allows the short levers to fall, which in this position do not project into the slit. The pressure of the water on the screw blades tends to turn the upper blade and the cylinder towards the left, and the lower blade and free falling piece with the wings towards the right, and thus preventing the wings from slipping off the ledges, and the consequent inopportune falling of the borer. In consequence of the opposite tendency of the two screw blades, and the friction of the swivel joint, the apparatus is raised without rotation, when the borer has attained its highest position, and commences to descend, the pressure of the water beneath the screw blades tends to turn the upper screw and the cylinder to the right, and the lower screw blade and the falling piece to the left, which tends to throw the wings off their seats, the pressure of the water beneath the two hinged lids, or semicircular caps, raises them and the leather straps with the short levers, and the projecting part of the levers presses against the wings; the combined effect of all these suffices to throw the wings off their seats. It has been found in experience that with a free falling weight of 5 cwt., the effects of the screw blades was not sufficient to throw the wings off their seats.

During the free descent of the free falling piece the pressure of the water beneath the lower screw blade turns the free falling piece to the left, as far as the width of the long vertical slit will allow. In consequence of the much greater velocity with which the free falling piece falls than that with which the rope and the cylinder descend, the resistance of the water against the lower screw blade is greater than that against the upper blade, so that the tendency of the descent of the whole apparatus is to cause the rotation of the free falling piece to be greater than that allowed by the slit. It is found in practice, however, that the inertia of the cylinder is sufficient to prevent it being turned with the cutter. As the cylinder descends still further the wings glide (relatively so) along the left side of the long vertical slit; where, however, the left side becomes inclined (as the borer is so firmly fixed in the cut caused by the blow that it, and consequently the wings, cannot rotate), the cylinder is caused to rotate slightly towards the left, and this rotation is assisted by the pressure of the water on the top of the upper screw blade immediately the rope begins to ascend; in consequence of which the wings are brought vertically over their seats, and are caught by these on the further rise of the apparatus, raising the free falling piece with it.

It will be evident that the angle through which the free falling piece is rotated depends on the width of the long vertical slit. As it is sometimes necessary to alter the number of blows for each complete rotation of the cutting tool, to suit the varying nature of the strata passed through, &c. The width of the slit is varied by screwing long side pieces, of suitable breadth, on to the cylinder close to the slit. It will also be evident that the regular rotation of the cutting tool renders the use of a flat rope indispensable.

In our next lecture we shall commence the consideration of "rotatory boring."

ROYAL SCHOOL OF MINES.

The following is the list of Associates for the present year:—
Associates in Mining and Metallurgy—Folkard, C. W.; Huntington, A. K.; Voelcker, E. W.
Associates in Mining—Liveing, E. H.; Merritt, W. H.
Associates in Metallurgy—Copeland, A. C.; Hogan, J. F.; Lemann, C. H.; Leyson, W.; McCarthy, E. T.
Associate in Geology—Sawyer, A. R.
The Edward Forbes Medal and Prize of Books was awarded to A. Heilprin.
The De la Beche Medal and Prize of Books to E. W. Voelcker.
The Murchison Medal and Prize of Books to F. G. Mills.

GEOLOGICAL SOCIETY OF LONDON.

June 20.—Prof. P. MARTIN DUNCAN, M.B., F.R.S. (President), in the chair.

George Alexander Gibson, M.B., D.Sc., Lauder-road, Grange, Edinburgh; Henry P. Gurney, M.A., clerk, Fellow of Clare College, Cambridge; John Higson, mining engineer, Albert-square, Manchester; and Francis Stevenson, M.I.C.E., chief assistant engineer, London and North-Western Railway, Euston Station, N.W., were elected Fellows of the Society.—Oswald Fitch, Highbury New Park; John Hadkinson, Brunswick-street, Liverpool; B. Holgate, engineer, Atkinson-street, Hunslet, Leeds; H. F. Parsons, M.D., Goole, Yorkshire; and Edgar P. Rathbone, Duke of Norfolk's Nunnery Colliery Offices, Sheffield, were proposed as Fellows of the Society.—Stephenson Clarke, Croydon Lodge, Croydon, Surrey; William Hunter, Sandhoe, near Hexham; and the Rev. W. Roberts, St. Leonard's-terrace, Chelsea, will be balloted for as Fellows of the Society.

The following communications were read:—

- 1.—"On an hitherto Unnoticed Circumstance affecting the Piling Up of Volcanic Cones." By R. Mallet, F.R.S., F.G.S.
 - 2.—"The Steppes of Southern Russia." By T. Belt, F.G.S.
 - 3.—"The Glacial Period." By J. F. Campbell, F.G.S.
- In this paper the author gave the results of numerous observations extending over many years, and made in many different parts of the world, the results of which had led him to form the opinion that no geological record exists of any abnormal Glacial periods colder than the present world's climate. But if the term "Glacial period" be used with a limitation, such as "local," or "Alpine," or "European," he saw nothing to object to. Changes in the relations between the surface of the earth and the undoubtedly permanently glacial portions of the atmosphere, principally brought about by changes of level in the former, appeared to him sufficient to account for the phenomena. The most recent so-called Glacial periods being fixed in Post-pliocene times, the author remarked that Indian glaciers (lat. 27°–32° N.) are now almost as large as they have been since the deposition of the crumpled Tertiary deposits known as "Nahans" and "Sivaliks." A similar result was obtained from observations in the Caucasus (lat. 40°) and Rocky Mountains (lat. 36°–37° N.). In Northern Italy (about lat. 45°–46° N.) glaciers were a great deal larger in Post-pliocene times than at present.
- 4.—"The Action of Coast Ice on an Oscillating Area." By Prof. J. Milne, F.G.S., of the Imperial College of Engineering, Tokio, Japan.
 - 5.—"On Points of Similarity between Zeolitic and Siliceous Incrustations of recent formation by Thermal Springs, and those observed in Amygdaloid and other altered Volcanic Rocks." By Prof. A. Daubrée, F.M.G.S.
 - 6.—"On the Cretaceous Dentalidae." By J. S. Gardner, F.G.S.
 - 7.—"On a number of New Sections around the Estuary of the Dee which exhibit Phenomena having an important bearing on the Origin of Boulder Clay and the Sequence of Glacial Events." By D. Mackintosh, F.G.S.
 - 8.—"Discovery of Silurian Beds in Teesdale." By W. Gunn, F.G.S., and C. T. Clough, B.A., F.G.S., of H.M. Geological Survey.
 - 9.—"On the Superficial Geology of British Columbia." By G. M. Dawson, F.G.S., Assoc. R.S.M., of the Geological Survey of Canada.
 - 10.—"The Exploration of the Ooliferous Deposit at Windy Knoll, Castleton, Derbyshire." By Rooke Pennington, LL.B., F.G.S., and Prof. W. Boyd Dawkins, M.A., F.R.S., F.G.S.: by the latter.
 - 11.—"Description of the Fossil Organic Remains from Bendigo." By M. Carl August Zacharise: communicated by the President.

12.—"Notes on some recent Discoveries of Copper Ore in Nova Scotia." By Edwin Gilpin, M.A., F.G.S.

The author described the occurrence in the northern part of Nova Scotia of a great band of Silurian deposits, running nearly east and west, and traversed in a corresponding direction by numerous detached bands of granites, syenites, &c. Roughly parallel to the line of the latter there is a tolerably well-defined series of fractures running from Parrsboro, on the Bay of Fundy, to Guysboro, on the Atlantic Coast. The course of this line of disturbance is marked by metamorphism, and by the presence of associated ores of iron and copper. The principal localities where the latter occur are noticed by the author, who states that the copper deposits attain their greatest development near Lochaber Lake and Polson's Lake, where they form a series of veins cutting at oblique angles black and red shales and quartzites, apparently of somewhat doubtful age. The quality of the ore is said to be good.

13.—"Glacial Drift in the North-Eastern Carpathians." By R. L. Jack, F.G.S., and J. Horne, F.G.S., of the Geological Survey of Scotland.

14.—"On Terminal Curvature in the South-Western Counties." By W. A. E. Usher, F.G.S., of H.M. Geological Survey.

15.—"On the Chronological Classification of the Granitic Rocks of Ireland." By G. H. Kinahan, M.R.I.A.: communicated by Professor Ramsay, F.R.S., F.G.S.

16.—"The Cambrian Rocks of South-East Ireland." By G. H. Kinahan, M.R.I.A.: communicated by Prof. Ramsay, F.R.S., F.G.S.

The next meeting of the society will be held on Wednesday, Nov. 7.

BRISTOL MINING SCHOOL.

Two out of the five doctorates awarded this year by the London University have fallen to old scholars of this school.

Dr. Walter Saise has graduated in Geology and Palaeontology. He took a Royal Exhibition at the Mining School, and the Associateship of the Royal School of Mines in all three departments.

Dr. Herbert Munro also took a Royal Exhibition at the Mining School, the Associateship of the Royal College of Science, and the Chemical Scholarship of the London University in graduating as Bachelor of Science.

This Scholarship has again fallen to an old scholar of the Mining School in the person of Mr. Ernest Cook.

IMPROVED GAS FURNACES.

At a recent meeting of the Society of Engineers, at Liège, an interesting paper descriptive of Bicheroux's Gas Furnace system was read by Mr. RAZE, the general manager of the Ougrée Iron Company, near that place, and as Mr. C. Holste, of Great St. Helen's, is now introducing it into this country, a short account of it may not be uninteresting. All the heating and puddling furnaces at Ougrée are now worked by gas on Bicheroux's system. Formerly there were 27 ordinary single puddling-furnaces, which have been supplanted for the same production by 15 gas furnaces, each with two working doors. The 27 ordinary furnaces required 108 men for day and night service, 54 being master puddlers. The 15 gas furnaces now only require 90 men, of which 30 are master puddlers. The work at the gas furnaces is much lighter than at ordinary furnaces. The saving of coal at Ougrée since the general adoption of the gas furnaces amounts to 30 tons per day, and the coal used now is of an inferior kind, therefore cheaper. There is a plentiful supply of steam, though there are fewer puddling furnaces. No other boilers are used than those attached to the heating and puddling furnaces.

The apparatus consists of three distinct parts—a gas producer, where only a small quantity of air is admitted through the grate for the production of carbonic oxide; a mixing chamber, where this gas and air is collected by the natural draught, and where the combustion of the gas begins; and a furnace or laboratory, where the combustion is nearly completed, and where the different reactions in the puddling process take place. The dimensions of each of these three parts vary with the composition of the different coals, and the system can be applied to all kinds of coal, even to such which, from being small and slatey, are not suitable for ordinary puddling. The gases and air necessary for their combustion being brought together at different temperatures, and having to be drawn into the mixing and combustion chamber by the same chimney, it is easily understood that the dimensions of their conduits must vary with each kind of coal, and that the manner of bringing them together is not unimportant. Before the air arrives at the intermediate chamber it is allowed to circulate beneath the bottom of the furnace, and in the sides of the chamber itself, in such a way that the advantages of heating the air, as well as that of cooling such parts of the furnace which cannot be heated without injury, are obtained. The gases which leave the furnace not completely burnt are utilised for the heating of the boilers as in ordinary furnaces. The management of the fire is very easy, waste is diminished, the usual dimensions of the furnaces are increased, and there is a working door on each side.

With regard to the economy in coal, Mr. Raze states that with the ordinary furnaces the puddling of ordinary white Ougrée iron required 18 to 20 cwt., whilst it is now done with 12 cwt. per ton of puddled bars produced. The puddling of fine-grained iron, which required 26 to 30 cwt., is now done with 16 cwt. Such is the advantage with regard to the quantity of coal. As to the quality, this gas furnace system presents also a very marked advantage, as it does not require large coal (charbon roulant). The working is just as regular with small coal even when screened through meshes of 20 millimetres ($\frac{3}{4}$ in.) As to the composition of coal, the quantity of volatile matter is, of course, of great influence; they work with "Six-Bonniers" coal, containing little gas (18 to 20 per cent.), which gives, however, good results. They have used with like success nearly all the coals of the Seraing basin—Ougrée, Cockerill, Espérance, Gosson, La Hayes, and Kessales. All have given the same results as to quantity, the consumption of coal per ton of iron has varied according to the proportion of rock being greater or less. Diminution of waste and improvement in quality naturally result from the almost complete non-admission of cold air, be it through the furnace door or through the grate, the latter being always covered by a pretty thick layer of fuel. The economy in waste amounts to 3 or 4 per cent.—that is to say, with 100 kilometres of puddled bars the loss in the furnace is only 9 or 10 kilometres, instead of 13 or 15, as they had regularly theretofore. They think they will diminish this waste considerably when experience shall have settled the best shape of certain parts of the furnace.

There is also a diminution in the cost of repairs. The two doors allowing an easy access to all parts of the hearth, the fettling can be properly kept in order. Moreover, as the coal never comes in contact with the bridges, they work for several weeks without requiring any repairs. As to the wear and tear of the fire-bars, it is mentioned that the low temperature at which they work in the fire-place, and the quantity of clinkers they can leave there without interfering with the working of the furnace, allow them to keep the grate always dark. The bars are said not to alter in the least, so that after five months' work $\frac{1}{2}$ in. bars still retained their sharp edges; and with regard to the workmen there is the advantage that with a uniform price per ton the men working on gas furnaces can earn 25 to 30 per cent. more than those working with ordinary furnaces.

As to the general advantages of the invention, it is mentioned that the gas furnace occupies less space than ordinary furnaces, that many of the castings of the old furnaces can be utilised, and that the workmen quickly learn to use the new furnace, as is evidenced by the fact that they have sent out nobody to start furnaces in works where the system has been adopted. It is estimated that the number of master puddlers of an iron-works may be reduced by about one-half for the same production. That the number of tools to be taken care of diminishes in the same proportion; that the cost of building does not amount to 2000 frs. per furnace; that the production of steam is the same as that of two ordinary puddling-furnaces; that the gases are completely burnt at their arrival in the chimney, for since the adoption of the gas furnace in our works one of the collective chimneys, which was formerly heated to an extent that we had to raise the refractory lining, keeps now nearly perfectly cold; that the system is the best adapted for the utilisation of the most irregular coal; that it leaves each ironworks free to make the bottom in scrap iron

* Being Notes on a Course of Lectures on Mining, delivered by Herr Berggrath, Dr. von Gronow, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

† This number might, perhaps, be somewhat increased if the disc to which the crank pin is attached were arranged on the principle of a quick down stroke. In this case attention should be paid to the proper balancing of the disc, &c.

or cinder, to cool the bridges by water or otherwise—in short, not to modify in these two respects anything in the custom of the iron-works, and in the habits always so deeply seated in workmen; and that the cleaning of the grate is less distressing than in ordinary furnaces, the cleaning not lasting so long, and their number being very much reduced, for the grates are only cleaned after two charges, and then only one-half of the grate.

HOW AND WHEN TO INVEST.

Although, probably to secure uniformity of title, the pamphlets from time to time noticed in the *Mining Journal* as having been issued for the guidance of investors by Mr. E. J. BARTLETT, of Great St. Helen's, are put forth as new editions only, it will readily be understood that as the information given is intended for use at the time, each edition may really be regarded as a distinct treatise. Referring to the recommendations in his previous edition (the present is the tenth), he points out that he then suggested eight securities for investment, and after tabulating the variations in price, he remarks that investment in the bonds would have resulted in an increase in the capital embarked, whilst in addition the dividends have been regularly paid. With reference to the mines, he shows that the employment of 1000, in each of the three named would have resulted in a profit on market value alone of about 2500. There are, as usual, interesting chapters on Trade and Commerce, on British, Colonial, and Foreign Government Securities, Railways, Joint-Stock Banks, and Telegraphs, these being succeeded by two—on Coal and Mining—in which the readers of the *Journal* are more closely connected.

Few more eligible investments can, Mr. Bartlett says, be found than well-selected collieries. Unlike mineral properties generally, the extent of a coal field can be determined with certainty, and its future yield easily calculated. A metalliferous vein is liable to many modifications; a seam of coal is likely only to be deranged by what are termed faults. These are generally to be traced from the external conformation of the country. Any other difficulties, such as dykes of stone, which are seldom of more than a few feet in thickness, and cost but a trifle to pass through, are confined to certain localities, and are equally shown by surface indications. In England the nature and geography of our coal deposits has been so carefully studied that the geology of each district is well-known, and it is alone in the case of some new discovery that the faults or dykes may by chance not have been clearly defined. Such instances are rare, and even in them the general surveys which have been made, with other objects, serve to show with considerable precision the nature of the underground landscape. It may then be safely assumed that when the thickness of a seam of coal has been once ascertained, its extent, and the consequent amount of coal it contains, are matters of simple calculation. A coal property is similar to one in simple land, with the great advantage that the crop is not dependent on the seasons for its production; and though it may, of course, be exhausted with time, that may be ascertained at the outset. There are, he remarks, many sterling coal-producing properties at the present time, offering facilities for employment of surplus capital, shares in which remain at ridiculously low prices, from the simple fact that the investing public will rather believe the reports of foreign adventures or concerns thousands of miles away than the merits of undertakings within a few hours' journey, many of which would, he thinks, pay the capitalists well, and there cannot be a more favourable time than the present to employ surplus means.

Turning to metalliferous mining, Mr. Bartlett remarks that if properly conducted there are few more legitimate enterprises. Taking the amount of capital invested, and the profits which have been derived from mining, no form of investment will be found to have made greater aggregate returns. The reason why it does not stand so high as under the circumstances it ought is that in estimating returns the past is for the most part overlooked, and the present alone considered. As in other undertakings, there must be in mining, moments not only of special but of general depression. Looking dispassionately at the present state of mining in Cornwall and in other counties producing copper and tin, it is evident that the existing state of depression is due rather to a series of unfavourable circumstances in this country than to foreign competition. All branches of trade and industry are alike suffering from the same causes. Mining, as being peculiarly sensitive to such influence, is doing so to a greater degree than most others. When the recovery begins to set in, as there is every appearance of its doing, though the settlement of the labour question may delay it for some short time, mining will at once begin to recover; but as we have called into existence a very formidable foreign production, we must set about introducing all those improvements and labour-saving appliances which may enable us to produce our ores at the cheapest possible rates. After stating his opinion as to the most desirable channels for investment, he adds that it will take time to remove the sad want of confidence (existing in the minds of many), owing to the losses which have been sustained, or encourage the employment of surplus means in what is called speculative security, but the "clouds of trickery" are dispersing by the purifying action of the recent depression, and there remains a field of investment open, wide and good enough for all. Let caution only be exercised and a judicious outlay now will be almost doubled by the certain advance in prices of any securities possessing merit.

CHEMICAL HANDICRAFT.

Although professors always tell their students that a man is not worthy of the name of chemist unless he can make his own apparatus or utilise anything at hand, and although we have seen very accurate analytical work done by a noted chemist with only a few reagents and measures carried with him in a small unfurnished dressing case, the teacups and wineglasses obtainable in a small hotel far beyond the reach of ordinary civilisation, much more of chemical apparatus manufacturers, there can be no question that practically and under ordinary circumstances the chemist does not seriously lessen the business of the apparatus maker, as he very soon finds that there is vast economy both in time and cost in walking ten miles and paying 1s. 3d. for a Liebig's apparatus for the absorption of carbonic acid in a solution of caustic potash instead of attempting to make one himself, though he may have a fair number of pounds of glass tubing to practice upon. For this reason such volumes as "Chemical Handicraft," although really no more than a large priced catalogue, will prove very useful to most who practice chemistry, since it will not only enable them to ascertain the price of any given piece of apparatus, but also to see almost at a glance whether any better form than that which one has been accustomed to has been devised, or whether any cheaper substitute can be readily obtained.

Another useful application of the book is to assist those about to fit up chemical laboratories in determining how to secure the largest efficiency at the lowest cost. Whether his requirements be large or small he can readily accommodate himself. Thus there is the admirable set Nos. 4363 and 4364 specially arranged for class teaching, and described some 20 years ago by the Rev. F. Temple, H.M. Inspector of Schools. This Messrs. Griffin have modified by replacing such apparatus as has been improved upon in the interval, yet without interfering with the excellent general arrangement, and supply the set complete for 22l. 1s., including chemicals, or 19l. 19s. without chemicals, so that there should be no difficulty in even limited schools in obtaining the requisite facilities for teaching chemistry generally. The volume gives hints on furnishing a laboratory, and other useful information. The gas furnace with which Mr. Griffin's name is so honourably connected has been already described in the *Journal*, but it may again be mentioned that it is very simple and efficient in operation. The crucibles have hitherto been either suspended in a pierced plumbago cylinder, or supported on a trivet grate, both of which are liable to break when white hot, and, therefore, a cause of trouble and expense.

Crucibles vary so much in form and size that they are often not suspended from these cylinders exactly in the focus of the heating power. Trivet grates have the disadvantage that they interfere with the direct action of the flame upon the crucible, and it made slightly they break when heated to whiteness, but by the new form of burner devised by Mr. Griffin these defects are remedied. In the new burner the circle of gas jets are enlarged so as to leave a space round the central jet. An atmosphere similar to those used in Hofmann's combustion furnace, but of greater bulk and strength, is dropped over this central jet, and forms a solid support for the crucibles. This support does not readily break, but should an accident happen it can be replaced at the cost of a few pence. It brings the bottom of the crucible exactly into the focus of heat, and itself supplies a portion

of the heating power of the burner. It also enables one to use any crucible at hand independent of its form or size. A strong lateral arm cast on the body of burner supports an upright iron rod which carries the chimney of the furnace.

By prolonging the legs of the burner upwards they are made to carry the clay furnace, and thus by doing away with a stool or other support the construction is simplified and the cost lessened. A plumbago cylinder to deflect the flame and entrap the heat is placed round the crucible, and is covered with an ordinary crucible cover, by removing which the crucible can be inspected. These fittings, however, are merely adapted from Griffin's blast-furnace, which was introduced many years ago. Access to the crucible in the furnace is gained by turning aside the chimney and lifting the top plate of the furnace, which is provided with handles for this purpose. These handles do not become very hot even when the furnace is at a white heat. The power of these new burners is very remarkable, one of small size consuming only 20 ft. of gas per hour, and having a diameter 4 ft. high, being capable of fusing $\frac{1}{2}$ lb. of cast-iron in 35 minutes from the time of lighting the gas, or melting gold, silver, or copper in crucibles placed within a muffle measuring 6 in. long by 3 in. wide. If a chimney 6 ft. high be employed cast-iron can be melted in crucibles placed within the muffle. These results, which are probably the highest yet placed within the reach of the chemist, are attainable with certainty and rapidity. The publication of the volume is certainly an additional service rendered by Mr. Griffin to practical chemistry, and from the high reputation he has ever enjoyed as an author of most instructive chemical works no fear need arise as to the reliance that may be placed upon every fact stated.

"DUST TO DUST: SANITARY MODES OF BURIAL."—Under this title an interesting little pamphlet, addressed to his Grace the Duke of Sutherland, by Mr. Samuel Phillips Day, has just been published by Mr. Hodges, of King William-street, Strand. The opening chapter on the burial rites of various nations is full of information, and is calculated to do much to remove the prejudice against incineration. The next chapter shows the progress making for the reintroduction of incineration, and there are then capital chapters on mourning customs, the force of prejudice, and the chief objections to cremation; whilst the concluding chapters explain the real object of the book to advocate the use of Haden's basket coffins, and interment at Woking Necropolis. The pamphlet is ably written, and well calculated to attain the object in view. It is, moreover, admirably printed, and on excellent paper.

Meetings of Public Companies.

COLORADO UNITED MINING COMPANY.

The ordinary general meeting of shareholders was held yesterday at the offices of the company, Great Winchester-street, Sir Cecil Beadon, K.C.S.I., in the chair.

Mr. J. F. H. TRAUTMANN (the secretary *pro tem.*) read the notice convening the meeting. The report and accounts were taken as read. The CHAIRMAN said, it was so short a time since he had last had the pleasure of addressing the shareholders, at the extraordinary meeting held in March last, that he had very little more to say. There was, however, one important piece of information regarding the working of the mine, which had been conveyed to the board by telegram, this was the announcement that \$15,500 worth of ore had been sold; but the agent had not reported the full quantity of ore that he had taken out of the mine, though it was known that he was working in the seventh and eighth levels in the old Terrible Mine, and that he was taking out ore of considerable value. Hence he (the Chairman) thought they might congratulate themselves that everything at the mine was going on well. He thought, further, that they might now call Mr. Hamill, a friend of the company, for he was working most cordially with them, and was carrying on the operations in the two tunnels—the Silver Tunnel and the Chelsea Reach Tunnel—the latter of which it was expected would reach the Terrible lode at a lower depth than the company's tunnel would, and that in a very short time, whilst the other tunnel was expected to reach the Chelsea Beach lode, which was believed to be a very valuable one, in about the same time. Mr. Anderson (the secretary of the company) had been very busy during the past four months in preparing and completing the legal arrangements for the transfer of the property, and an agreement had been executed between Mr. Chaffey and Mr. Hamill on the one side, and the company on the other, by which they agreed to make over their property to the United Company, and subsequently to that there had been a regular deed of conveyance and quit-claim of all the lodes on all the property which previously belonged to them on that side of Brown Mountain. There was one difficulty the company had to contend with—the transfer of the property to an alien company, which could not be effected under the laws of the State of Colorado, this company having acquired the property before Colorado was made into a State. Trustees had, therefore, been appointed for the property, of whom Mr. Moffatt was one and Mr. Andrews the other, Mr. Andrews being about to declare himself a citizen of the United States, with a view of being thereby legally qualified to hold the property. Everything was going on satisfactorily, and voluminous letters had been received from Mr. Andrews, which were of a satisfactory character. Unfortunately the board were now compelled to devote the proceeds of the mine to its development; but the question might arise, though it had not done so yet, as to the desirability of securing a small loan on debentures. But if such a course were considered a desirable one by the board, the shareholders would have due notice of the intention of the directors to propose some scheme, so that the shareholders would have an opportunity to consider the matter. Mr. Henty, the manager, gave the outside cost of the improvements necessary to develop the mine to its fullest extent at \$9000, which he thought a small sum indeed. He (the Chairman) thought the thanks of the shareholders were due to the auditors (Messrs. Marshall and Colvin) for having examined the accounts without charging the company for their services. In conclusion, the Chairman moved the adoption of the report and accounts.

Mr. J. COOPER DAVIS seconded the motion. Mr. WALKER suggested certain economies in the expenses, notably in the rent of the office, which he thought was too heavy. The CHAIRMAN, in reply, said the amount placed in the accounts for general charges, office rent, &c., included stationery and printing. He could assure the shareholders that every attention was paid to economy by the board. The directors had not taken any fees for the last three years; if, however, the company became successful, as they all hoped, those fees would naturally be paid. The report and accounts were then adopted.

The CHAIRMAN moved the re-election of the retiring directors, Messrs. J. Cooper Davis and R. Maxwell Witham. Sir HENRY RICKETTS seconded the motion. Mr. WALKER objected to the re-election of Mr. Maxwell Witham, on the ground that that gentleman lived at Dumfries, and could not give sufficient attention to the affairs of the company.

The CHAIRMAN said Mr. Maxwell Witham represented the Scotch shareholders in the company, and sometimes attended the meetings of the board. The motion was carried.

Mr. CLYDE proposed the re-appointment of the auditors, Messrs. W. J. Marshall and B. J. Colvin, thanking those gentlemen for their gratuitous services in connection with the auditing of the accounts. Mr. WALKER seconded the motion, which was carried.

The proceedings closed with a vote of thanks to the Chairman and directors.

[For remainder of Meetings see to-day's Supplement.]

CORNISH PUMPING ENGINES.—The number of pumping-engines reported for May is 17. They have consumed 1930 tons of coal, and lifted 14,400,000 tons of water 10 fms. high. The average duty of the whole is, therefore, 50,800,000 lbs., lifted 1 ft. high, by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

Dolcoath—85 in.	Millions	55.4
Melland—78 in.		59.0
Melland—Gundry's 80 in.		59.0
West Bassett—Thomas's 60 in.		54.7
West Wheal Frances—58 in.		53.8
West Wheal Seton—Harvey's 85 in.		53.6
West Wheal Seton—Wheeler's 70 in.		61.8
Wheal Unity Wood—70 in.		61.7

CHEMICALS, MINERALS, AND METALS.—Messrs. J. Berger Spence and Co. (July 11).—Acetate of Lime, 9l. 10s. per ton.—Alumina, Alum, 8l. 15s. for loose lump; ground, 7l. 15s.—Aluminous cake, 4l. 10s.—Ammonia: Sulphate, grey, 19l. 10s.; best London white, 19l. 10s.; muriate—white, 27l.; salt ammoniac, firsts, 45s.; seconds, 44s.—Acid: Tartaric, English, ground or crystal, 1s. 6d.; foreign, 1s. 5½d.; crystals, oxalic, 6d.; sulphuric, 3l. 10s. to 3l. 15s.; picric acid, 1s. 6½d. per lb.—Arsenic: New Consols 8l. 10s.—Bleaching Powder: At 5l. 5s.; for the whole of the year 1877, 11l.—Litharge: Best flake, 24l.—Metallic Salts: Iron salts, green and rusty copperas, 5s.; in casks or barrels, 6s.—Copper Salts: Sulphate of copper, 22l. 15s.—Magnesia: Epsom salts, 3l. 5s.—Nitrate of Soda: 14s. 6d. to 14s. 9d.—Potash: Muriates, 80 per cent., at 6l. 8s. 6d. f.o.b.; Prussiate, yellow, 10½d.; chloride, 9d.; bicarbonate, 4½d.—Soda: Cream caustic, 60 per cent., 12l.; white, 60 per cent., 12l. 7s. 6d.; soda ash, 1½d. to 1½d.; soda crystals, 4l. 5s.; ¼ carbonate, 11l.; salt cake, 2l. 10s.; Glauber salts, 2l. 15s.—Sugar of Lead: Brown, 24s.; grey, 30l. 10s.; white, 37l.—Brimstone: Best thirds, 5l. 7s. 6d. to 5l. 10s.; China-slag, 15s. f.o.b. Cornwall; "Rosenlynn," 24s.; "BM," 24s.—Iron Ore: Hematite, 16s. to 22s. 6d.; Algerian, 53 per cent., 14s. f.o.b.—Manganese:

Ores, 90s. for 70 per cent.—Pyrites: Spanish cupreous, 5½d.; non-cupreous, 6½d.—Phosphate of Alumina, 3l. to 3l. 10s. per ton.—Phosphate: High strength, 80 to 85 per cent., 1s. 4d. to 1s. 5d. per unit; Estramada, 1s. 3d.; ordinary, 60 per cent., 1s.; precipitated phosphate of lime, 70 per cent., 5l. 15s.—Iron: Middle-borough, Pig-iron, 32s. 1d. 45s.; No. 3, 40s.; No. 4, 40s.; No. 5, 40s.; No. 6, 40s.; No. 7, 40s.; No. 8, 40s.; No. 9, 40s.; No. 10, 40s.; No. 11, 40s.; No. 12, 40s.; No. 13, 40s.; No. 14, 40s.; No. 15, 40s.; No. 16, 40s.; No. 17, 40s.; No. 18, 40s.; No. 19, 40s.; No. 20, 40s.; No. 21, 40s.; No. 22, 40s.; No. 23, 40s.; No. 24, 40s.; No. 25, 40s.; No. 26, 40s.; No. 27, 40s.; No. 28, 40s.; No. 29, 40s.; No. 30, 40s.; No. 31, 40s.; No. 32, 40s.; No. 33, 40s.; No. 34, 40s.; No. 35, 40s.; No. 36, 40s.; No. 37, 40s.; No. 38, 40s.; No. 39, 40s.; No. 40, 40s.; No. 41, 40s.; No. 42, 40s.; No. 43, 40s.; No. 44, 40s.; No. 45, 40s.; No. 46, 40s.; No. 47, 40s.; No. 48, 40s.; No. 49, 40s.; 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for the traverse of such heated air and gases. The firing or heating of the contents of the kiln or chamber is continued until the incorporated materials assume the desired consistency, when the agglomerated material may be allowed to cool, and be then broken into the desired size or forms suitable for being employed in a blast-furnace or otherwise for the production of iron. In order to effect such cooling process and to utilise the residual heat he prefers to cause air to pass through the passages of the consolidated iron ore, and he employs the same for effecting the desired object—that of agglomerating the washed ore contained in a separate chamber or kiln in the manner described.

VICE-CHANCELLOR MALINS ON LIMITED LIABILITY.—Before the Select Committee appointed to enquire into the working of the Companies Acts 1862 and 1867 Vice-Chancellor Malins, in reply to the Chairman, said he had been an advocate of limited liability companies when he was in the House of Commons, and he was of the same opinion after 10 years' experience on the Bench. He was bound to say, however, that the system had been very much abused, as in the case of Overend, Gurney, and Co. He was of opinion that the companies should be started unless 1000*l.* at least was subscribed. In one case—he would not mention names—a company was formed by a financier amongst his clerks, and only 35*l.* was subscribed; but a few days after it was sold for 400,000*l.* The public were injured by this transaction, because they were induced to take shares in consequence of the company being formed in a well-known name. Difficulties should be thrown in the way of the formation of these bubble companies. He would not allow a company to borrow money unless a certain portion of the capital were paid up. To prevent such a state of things as that which was disclosed in the Euphor case, he would suggest that there should be some public officer whose duty it should be to settle the memorial Articles of Association, to examine them for the purpose of preventing misstatements. Another great evil was that when a company was advertised and a certain number of shares applied for the directors commenced business. He knew one case in which a company advertised a capital of 250,000*l.*, but all that was subscribed was 1119*l.* in 50*l.* shares. The company at once commenced business, and effected a policy with a mercantile firm who believed the advertisement. A fire occurred, and it was then proved that the company had never had command of more than 300*l.* at one time. When application for the amount of the policy was made the company raised a frivolous and vexatious objection, alleging misrepresentation on the part of the insurers. The directors in such cases as these when the whole of the shares were not paid up, would not see the moral obligation that rested on them to pay the legitimate claims on the concern. He considered that, as in the case of Twycross & Co., where a bribe was paid to the promoters of the company, and the fact was not made known in the prospectus, in that way concealing the liabilities of the company, there was palpable fraud committed. The capital in this case was 300,000*l.*, and all that could be found when the company was sold up was 9000*l.* in plant. The case was treated under the 33rd section of the Act of 1867. He would limit the operation of the section to cases where there was real and not accidental fraud. It was impossible to protect the public from fraud by legislation, the devices for the obtaining of money being so great and the ingenuity of man so considerable. He thought that original shareholders should be obliged to pay a deposit on application for shares, and a further deposit on allotment. That would be some protection to the public.

RESPONSIBILITY OF LIMITED COMPANIES' SHARES AFTER PAYMENT IN FULL.—An important decision has been given in the Court of Appeal by the Master of the Rolls and Lords Justices James and Bagallay, affirming the decision of Vice-Chancellor Malins that in certain cases holders of shares in limited companies who have paid up in full are still further liable. The Maria Anna and Steinbank Coal and Coke Company (Limited) was formed with 160,000*l.* capital, in 10*l.* shares, to work some coal mines in Westphalia. The Articles of Association stated that six persons mentioned, shareholders in the company, had, for the purpose of paying part of the purchase-money for the mines, borrowed on the security of their joint and several promissory notes from the National Bank of Scotland the sum of 20,000*l.*, and from R. L. Jump the amount of 10,000*l.*, to be repaid in two years, with interest at 8 per cent.; and provided that the company should pay the 20,000*l.* and 10,000*l.* and interest respectively, and clause 5 of the Articles provided that "if the parties who have signed the above-mentioned notes for the said sums of 20,000*l.* and 10,000*l.*, or any of them, or the said company, shall be called upon to pay the said principal sums, or either of them, or the interest for the same respectively, and the said company shall not have in hand funds of the said company applicable to the payment thereof of sufficient amount, then and in such case each and every shareholder in the company for the time being shall contribute and pay to the company as a debt due to the company a proportionate amount of the sum or sums which the company shall be so called upon to pay, according to the number of shares held by each shareholder." The company was ordered to be wound up in 1873, and the assets were insufficient to meet the unpaid balance of the two debts of 20,000*l.* and 10,000*l.* The Vice-Chancellor held that the holders of fully paid-up shares were liable to contribute (in addition to the full amount of their shares) to the payment of the unpaid balance of these two debts in proportion to the number of their shares, and that the solvent shareholders must make up the deficiency resulting from the failure to pay of those shareholders who were insolvent. The shareholders appealed, but the Court of Appeal virtually confirmed the decision. The Master of the Rolls (Lords Justices James and Bagallay concurring) differed from the Vice-Chancellor only as to the extent to which each shareholder was bound to contribute. He agreed that each shareholder must contribute in the proportion which his share bore to whole number of shares issued. But the articles contained only a covenant by each shareholder that he himself would pay, not that the other shareholders would pay, and, therefore, the solvent shareholders were not bound to make good the proportion which was not paid by the insolvent shareholders. The decision affirms the principle that the Articles of Association can attach liability beyond that indicated by the Memorandum of Association, and upon which reliance has hitherto been placed.

NEW METALLIC ALLOY.—A novel method of producing alloys has been invented by Mr. FRANK RAYMOND, of Greenville, South Carolina. It consists in melting mica and mixing the same with any metal or composition of metals while the same is being melted, thereby rendering the metals harder, admitting of better finishing, preventing corrosion or rust, less susceptible to effect by fire, heat, or friction, and more durable. He proposes to take of mica the quantity necessary to produce the desired effect, and a relative quantity of borax, saltpetre, and soda, or either or any two of them, and place the same in the crucible or furnace, together with the necessary quantity of metal or metals, and melt the whole in the usual way. The borax, saltpetre, and soda will cause the mica to melt, when it will mingle with the metal or metals in the crucible or furnace, producing the effects mentioned. In carrying the invention into operation, the ingredients have been compounded in the following proportions—Lead, one part; zinc, one part; mica, two parts; also brass, three parts; copper, one part; zinc, one part; lead, one part; mica, four parts; also copper, four parts; mica, four parts; tin, one part; lead, one part.

PETROLEUM.—Regarding refined petroleum oil, Messrs. S. C. Joyce and Co. report that notwithstanding the arrivals, the market has been very firm in all positions, with a good demand for spot oil, which has ruled from 10½*d.* end of last week on the American quotation coming better, to 10½*d.* through the early part of this week. Month oil has sold at 10½*d.*, and August at 10½*d.* For last four months deliveries buyers have rather held off, not caring to meet the firmness in values; a small quantity has been sold at 10½*d.* up to 11*d.* Closing prices—Spot, 10½*d.*; August, 10½*d.*; last four, 11*d.* Import cost about 10*d.* c.i.f., 10½*d.* landed.

Total stock in sight at the large northern continental market is	931,600
Total stock same time last year	615,500
Total stock same time 1875	1,081,000
Deliveries Jan. 1, 1877, till July 7	982,250
Deliveries same time last year	929,000
Deliveries same time 1875	779,000
London stocks and deliveries—afloat and loading, about	40,000

FOREIGN MINES.

SIERRA BUTTES (Gold).—Sierra Buttes Mine: Receipts, \$32,028; total California expenses, including cost of mining and milling, \$21,897.—Plumas Eureka Mine: Receipts (including sulphurets), \$39,524; total California expenses, including cost of mining and milling, \$16,811.

LONDON AND CALIFORNIA.—The result of the working at the Original Amador Mine for the month of June is estimated at \$9003.

RICHMOND CONSOLIDATED.—R. Rickard, June 13: The ore discovered in the end of the 500 west drift has been opened on to the extent of 40 ft. in length and 12 ft. in width; the ore as far as seen is on an average of low grade. We are now preparing to sink on the ore; to all appearance we are on the top of an ore body, and in sinking on it I expect the ore will improve in value. All the other work being done to develop the western ground is progressing favourably. There is nothing new in any other part of the mine.

—R. Rickard, June 25: Since my last No. 1 rise, in back of the 500 drift, has been risen to the level of the 400 drift; the 400 drift is being pushed forward to make communication with the rise; in back of this rise there is still ore, but of low grade. No. 2 rise is up 25 ft., with low grade ore in the back. We are now cross-cutting from the end of the 500 drift to the north, to cut the ore which is dipping over the drift in that direction. The 600 drift west is in hard ground—slow progress is consequently made. Nothing new in any other part of the mine since my last.

FLAGSTAFF.—A cable despatch has (July 13) been received from the directors at Salt Lake City to the effect that "everything had been arranged satisfactorily, the payment of interest on debentures secured, and expenses for offices provided. The floating debt has been provided for, and is being reduced rapidly. The mine is working satisfactorily, and low proceedings against the company falling."

JAVILA.—The manager (June 6) states that the mill worked 19½ days, crushing 1400 tons of quartz, which produced 40½ ozs. of bullion. This remittance is valued at 1030*l.*, and the expenses for the month amounted to 913*l.* 10*s.* 6*d.*, including 80*l.* 17*s.* 8*d.* on capital account. Rain had begun to fall in showers, and it was hoped that water-power would soon be available for the mill.

SAN PEDRO (Chili).—S. Phillips, June 1: In the 165 fm. level the cross-cut driving towards the manto by four men has been very hard and wet during the month. We have not driven more than 450 metres during the past month, but the men have worked well. In the last two or three days the ground has become somewhat easier, and at times we meet with veins of yellow bronze, which to me seems a good indication of meeting with something rich when we cut the manto. We are now in somewhat more than 1750 metres from the shaft, and according to the distance of the manto from the shaft at the 150, we have six or seven metres more to drive to get into the manto. Although the ground is easier for driving, the coming water is more, which makes it hard work and retards the progress. Coming water about 2400 gallons daily. The winze in the bottom of the 150, sinking in the manto, is progressing favourably, and is producing good stones of yellow bronze, but as yet not sufficient to value; but the manto in the bottom of the winze is more promising than when our last report was forwarded. The cross-cut towards the Manto Verde is still poor, and hard for driving. We have two men stoping in the back of the 135, in a side of bronze ground, producing 2 tons of 17 per cent. ore per fathom. The tribute pitches in the 88 and 47 are not quite so good as when last reported, but still leaving a small profit.—Old Pit: The stopes a few metres below surface in the old works will produce 2½ tons of 20 per cent. ore per fathom.—Manto Verde: The tribute pitch at this manto will leave a small profit to the mine. The output for this month will, I think, be about the same as that for last month. Everything inside and out is working in a satisfactory manner.

CONDOS COMPANY OF CHILI.—J. Seecombe, June 1: Smelting Works: After much delay in getting a supply of fuel, in consequence of the rain, we are in regular work with our furnace making regulus, and I expect the blast-furnace will be working again tomorrow. I hope at last that this furnace will go well, and result in more economical smelting than with the reverberatory furnace. Telegrams: The following telegrams referring to later dates than the foregoing report have been received:—On June 11, dated Valparaiso, June 8—"15 tons of regulus and 40 tons of raw ore have been shipped per John Elder. Have got the blast-furnace in work, and it is giving satisfactory results. Our furnaces are at present producing per day 2 tons of regulus. Road to the mines is open. Have commenced carrying ores from the mines. Ground favourable, and good prospects making. Operation progressing satisfactorily." On June 20, dated Valparaiso, June 20—"23 tons of regulus and 7 tons of ores have been shipped per Cotopaxi, 500 tons of ores (including fluxing ores) are at Corral Quemado, intended for smelting. The fluxing ore on hand are sufficient, and the produce will come forward without delay." On July 7, dated Valparaiso, July 6—"9 tons of regulus and 10 tons of raw ore have been shipped per Iberia."

CAPE COPPER.—The Ookiep, Spectakel, and Trial Mines reports for May have been received. No material change in them from the last. Capt. Tonkin writes of Ookiep. The 80, east from No. 19 winze, has improved during the month, the present end being now worth 4 tons of purple ore per fathom, with every appearance of shortly becoming still more valuable.—Returns for May: Ookiep 550 tons of 32 per cent., Spectakel 33 tons of 22 per cent.—Bills of Lading Received: 73 tons per Anglican, 50 tons per African, 400 tons per Constance, and 400 tons per Selima.—Arrival at Port Nolloth: The Marion.—Sales by Public Ticketing: On June 19, 249 tons, at an average of 13*s.* 10½*d.* per unit, realising approximately 4300*l.* On July 10, 550 tons, at an average of 13*s.* 10½*d.* per unit, realising approximately 11,300*l.*

[For remainder of Foreign Mines, see to-day's Supplement.]

BEDFORD UNITED MINES.—This old established and well conducted mine appears to be again coming to the fore, and on or before likely to follow its celebrated neighbour, the Devon Great Ores, and to attain a position on our Dividend List. The mine is evidently being developed most vigorously, and under the old and approved system of mining, so widely different from the present—that is, taking ore away as fast as it is discovered. A reference to the proceedings at the meeting on Wednesday last will show that a large quantity of ground is almost available for increasing returns. The value of a concern is best seen in its resources, and under the present able management, and with the security of limited liability, the shareholders and the public may feel satisfied that a good and safe investment may be found in this well-known concern.

LEAD ORES.

Date	Mines	Tons.	Price per ton.	Purchasers
July 5	Great Laxey	100	£21 2 0	Nevill, Druce, and Co.
—	Caldbeck Fells	6 12	11 7 0	ditto
—	ditto	3 14 0	8 13 0	ditto
12	Talargoch:—			
—	Maesyrwddu	50	13 11 6	Adam Eyton.
—	Coetia Llys	30	13 16 6	ditto
—	North Hendre	10	12 11 6	Walker, Parker, and Co.
—	Rhyd Alun	15	12 2 6	ditto
—	Prince Patrick	20	13 1 6	Adam Eyton.

BLENDED.

Date	Mines	Tons.	Price per ton.	Purchasers
July 10	Talargoch	60	£3 12 6	Bagillt Smelting Co.
—	ditto	60	3 9 6	ditto
—	ditto	60	3 7 6	Tindale Spelter Co.

COPPER ORES.

Sampled June 27, and sold at Swansea, July 10.

Mines	Tons.	Produce.	Price.	Mines	Tons.	Produce.	Price.
Cape Ore	66	27½	£18 19 6	Cavera	84	8½	£5 5 0
ditto	66	27½	18 19 0	Betts Cove	110	11½	8 2 0
ditto	65	27½	19 2 0	ditto	110	11½	8 2 0
ditto	65	27½	19 6 6	Moonta Ore	54	26½	18 11 0
ditto	75	34½	24 5 6	ditto	53	27½	19 5 0
ditto	74	34½	24 1 0	ditto	39	27½	18 15 0
ditto	77	28½	19 13 6	Carraedo	100	12	8 11 0
ditto	71	28½	19 13 0	ditto	7	11½	9 2 6
Algerian	74	7½	4 6 6	ditto	18	7½	6 1 0
ditto	73	8	4 16 0	Aljustrel	81	4½	2 14 6
ditto	73	8	4 16 0	ditto	16	21	2 15 6
ditto	12	14½	4 6 6	ditto	9	13½	9 3 0
ditto	41	14	9 6 6	ditto	10	33½	13 12 0
ditto	1	59	38 10 0	Copper Reg.	10	33½	22 5 6
Kurilla	61	20	13 16 6	ditto	7	28½	19 7 0
ditto	60	23	13 15 6	ditto	5	30	20 0 0
ditto	60	13½	8 19 0	ditto	8	29½	20 2 0
ditto	47	20½	14 4 6	ditto	8	35	23 14 0
ditto	100	20½	14 2 6	Copper Ore	15	22½	15 2 6
Cronbane	95	2½	1 4 0	ditto	8	4½	2 10 6
ditto	80	3½	1 10 0	Australian	19	12½	8 5 0
Cavera	84	8½	5 5 0	New Quebec	14	18½	13 17 0
ditto	84	8½	5 5 6	Cacirinha	7	9	6 12 0
				ditto	1	15	9 15 6

TOTAL PRODUCE.

Cape	559	£11,511 2 6	Carraedo	127	£1027 15 6
Algeria	277	1,404 13 0	Aljustrel	113	628 13 0
Kurilla	275	3,539 5 6	Copper Regul.	38	808 12 0
Cronbane	275	360 0 0	Copper Ore	23	247 1 6
Cavera	252	1,325 2 0	Australian	19	166 15 0
Betts Cove	220	1,752 0 0	New Quebec	14	193 18 0
Moonta	145	2,753 4 0	Cacirinha	8	55 10 6

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names	Tons.	Amount.
P. Grenfell and Sons	455	£4,061 7 0
Nevill, Druce, and Co.	327	2,940 19 0
Vivian and Sons	327	340 10 0
Williams, Foster, and Co.	713	8,651 5 6
Mason and Elkington	71	1,395 3 0
Charles Lambert and Co.	10	222 15 0
Landore Copper Company	320	6,496 2 6
Total	2344	£25,798 2 0

Copper ores for sale, at Swansea, July 24.—Betts Cove 93, 93, 92, 92, 92, 115, 114, 108, 108—Union 100, 100, 95, 115—New Quebec 75, 75, 75, 75—Berchaven 105, 100, 100, 2—Knockmahon 153, 101, 29—Cavera 75, 75, 74—Aljustrel 75, 75—Burnt Ore 80—Cronbane 75—Portuguese 41—Copper Slag 23, 9—Cuba Precipitate 15, 10—Tan-y-bwlch 15—Copper Regul. 9, 6.—Tons, 3035 tons.

TOTALS AND AVERAGES.

21 cwts.	Produce.	Price.	Per unit.	Standard.
Whole sale	2344	£11 10 1	13 <i>s.</i> 6 <i>d.</i>	£20 11 6

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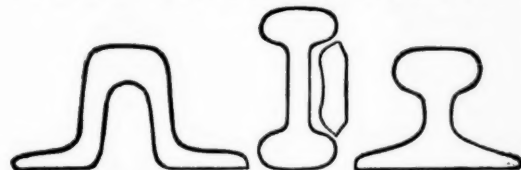
Bridge Section, 10 to 25 lbs. per yard.
Flange Section, 16 to 70 lbs. per yard.
DH Section, 50, 60, to 70 lbs. per yard.
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WATSON BROTHERS' MINING CIRCULAR.

Ten years ago the weekly information which had previously been published for a great number of years in WATSON BROTHERS' Mining Circular was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the *Journal* on the Clementina Mine.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fortnightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the *Compendium of British Mining*, commenced in 1837, and published in 1843, by Mr. WATSON, F.R.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the *Compendium*, published in 1843, Mr. WATSON was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and shareholding than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, but they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

WATSON BROTHERS,

MINING OWNERS, STOCK AND SHARE DEALERS, &c.,
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

D'ERESBY MOUNTAIN.—There is a splendid lode in the deep level started since our visit, and a tramway is to be put in forthwith. There is a fair prospect of this mine becoming one of the best in the district.

CLEMENTINA.—The reservoir is in progress, and will be complete in a few weeks, when there will be no more stoppages for want of water. A new 30-ft. wheel is to be erected as soon as possible, and, there, it is confidently hoped, will put the mine in a paying condition.

SATURDAY, JULY 7.—Tankerville have been in good demand, and close firm at 7½ to 8; Leadhills, 6 to 6½; Roman Gravel, 9½ to 10; East Van, 5½ to 6; Glenroy, 20s to 21s; North Lacey, 15s to 20s; Parys Mountain, 10s to 12s; 6d; Rookhope Lead, 2s to 2½; Great Lacey, 20s to 21s; Van, 3s to 3½; Monday, July 9.—Market quiet, and shares in lead mines generally weaker. Roman Gravel, 9 to 9½; Tankerville, 7½ to 8; East Van, 5½ to 6; North Lacey, 15s to 20s; Ladywell, 1 to 1½; Parys Mountain, 9s to 11s; West Tankerville, 10s to 21s; Great Lacey, 20s to 21s; Leadhills, 6 to 6½; West Chiverton, 14 to 16; Van Consols, 10s to 12s; 6d; Glenroy, 7s to 8; 6d.

TUESDAY, JULY 10.—Market very quiet. Roman Gravel, 8½ to 9½; Leadhills, 5½ to 6; East Van, 5½ to 6; Glenroy, 20s to 21s; North Lacey, 15s to 20s; Parys Mountain, 10s to 12s; 6d; Rookhope Lead, 2s to 2½; Great Lacey, 20s to 21s; Van, 3s to 3½; Monday, July 9.—Market quiet, and shares in lead mines generally weaker. Roman Gravel, 9 to 9½; Tankerville, 7½ to 8; East Van, 5½ to 6; North Lacey, 15s to 20s; Ladywell, 1 to 1½; Parys Mountain, 9s to 11s; West Tankerville, 10s to 21s; Great Lacey, 20s to 21s; Leadhills, 6 to 6½; West Chiverton, 14 to 16; Van Consols, 10s to 12s; 6d; Glenroy, 7s to 8; 6d.

WEDNESDAY, JULY 11.—Market continues very inactive, and prices in some cases weaker. Roman Gravel, 8½ to 9½; North Lacey, 15s to 20s; Parys Mountain, 10s to 12s; 6d; Rookhope Lead, 2s to 2½; Great Lacey, 20s to 21s; Van, 3s to 3½; Monday, July 9.—Market quiet, and shares in lead mines generally weaker. Roman Gravel, 9 to 9½; Tankerville, 7½ to 8; East Van, 5½ to 6; North Lacey, 15s to 20s; Ladywell, 1 to 1½; Parys Mountain, 9s to 11s; West Tankerville, 10s to 21s; Great Lacey, 20s to 21s; Leadhills, 6 to 6½; West Chiverton, 14 to 16; Van Consols, 10s to 12s; 6d; Glenroy, 7s to 8; 6d.

THURSDAY, JULY 12.—Market generally quiet. Rookhope firm at 20s to 22s, and North Lacey 15s to 20s. Roman Gravel, 8½ to 9½; Tankerville, 7½ to 8; Glenroy, 20s to 21s; North Lacey, 15s to 20s; Parys Mountain, 10s to 12s; 6d; Rookhope Lead, 2s to 2½; Great Lacey, 20s to 21s; Van, 3s to 3½; Monday, July 9.—Market quiet, and shares in lead mines generally weaker. Roman Gravel, 9 to 9½; Tankerville, 7½ to 8; East Van, 5½ to 6; North Lacey, 15s to 20s; Ladywell, 1 to 1½; Parys Mountain, 9s to 11s; West Tankerville, 10s to 21s; Great Lacey, 20s to 21s; Leadhills, 6 to 6½; West Chiverton, 14 to 16; Van Consols, 10s to 12s; 6d; Glenroy, 7s to 8; 6d.

FRIDAY, JULY 13.—Market again quiet, the dealers being principally engaged with the settlement. Rookhope Lead, 2s to 2½; Great Lacey, 20s to 21s; Van, 3s to 3½; Monday, July 9.—Market quiet, and shares in lead mines generally weaker. Roman Gravel, 9 to 9½; Tankerville, 7½ to 8; East Van, 5½ to 6; North Lacey, 15s to 20s; Ladywell, 1 to 1½; Parys Mountain, 9s to 11s; West Tankerville, 10s to 21s; Great Lacey, 20s to 21s; Leadhills, 6 to 6½; West Chiverton, 14 to 16; Van Consols, 10s to 12s; 6d; Glenroy, 7s to 8; 6d.

THE WEEK.

SATURDAY, JULY 7.—During the last week, without attracting much attention, a serious drop has been going on in gas shares. The cause assigned is that recent experiments with a new electric light show it likely to prove a formidable opponent by and by, and that the most serious cause of the fall is the long time too high. They were run up at the commencement of the year, when there were rumours that the Government might probably buy the existing companies up. Gaslight and Coke, A, dealt in to-day at 10s with 20s, a week ago. There has also been a fall of 1½ in London Gas, and one of 10s in Commercial Gas. The closing prices of these three companies were the worst of the day. Tramway shares were quoted thus—Dunfermline, 14s to 15s; Edinburgh, 14s to 15s; Glasgow, 10s to 10½; Liverpool, 13s to 14s; London, 10s to 10½; London Street, 11s to 12s; North Metropolitan, 10s to 10½; Provincial, 8s to 8½; Tramways Union, 4s to 4½.

MONDAY.—A further fall occurred in gas shares. Commercial, London, and Gaslight and Coke each closing ½ lower. The depression extended to Oriental and Bombay, the former closing at 7½, and the latter at 6½. Central Illinois shares are now in the ascendant, and may probably go a little higher still; they touched 85 to-day. London and Yorkshire Bank, 2s 6d paid, were quoted 1½ to 1½. Van Consols and Glyn were dealt in at 10s. Penarth and Eschquer were in request at 5½. Chapel House shares were quoted 2½ to 3; Newport Abercrombie, 2½ to 3; and Altam, 4 to 4½. Roman Gravel shares were offered, and did not close better than 9 to 9½. St. Petersburg Waterworks shares were done at 3½. Odessa, A, at 5.

TUESDAY.—Central Illinois shares touched 85, and do not seem to have touched their highest yet. The highest last week was \$98, and the lowest \$50. The last dividend was one of 4 per cent. For years previous to 1873 the company paid currency dividends of 10 per cent. The report of the London and Yorkshire Bank has been discussed, and discloses a very satisfactory state of things. The usual dividend of 4 per cent will be payable next week. The shares, with 2½ paid, may be had at 1½, which includes the dividend. Lower prices prevailed in mining shares. Roman Gravel gave way to 9, and Tincroft to 13. There was a fall of 6s in Everhardt, to 6½. There is still a large demand for gold here. Van Consols, 10s to 11s; Glyn, 6s to 8s; West Tankerville, 7½ to 8; Derwent, 2½ to 2½; Llanrwst, 2½ to 2½; Pateley Bridge, 1½ to 2½; Leadhills, 5½ to 6; Parys Mountain, 9s to 11s; Penarth, 4s to 5s; Eschquer, 3s to 3s 9d. In the Telegraph market Renter shares fell 1½, to 10. It is doubtful whether they are worth buying at this. The settlement commences to-morrow.

WEDNESDAY (Continued on day).—The rates ruling to-day were higher than last time, the "bull" account having become heavier. On Midland, York, A, and Birmingham there was again a backwardward, but all these stocks closed considerably lower. The South Eastern dividend was announced early in the morning as one of 3½ per cent, against 3¼ per cent last year. This was regarded as disappointing, the D-ferrid closing at 11, after touching 11½. The North British Coal and Iron Company announce a dividend of 2½ per cent. Pawson and Co. will pay 5 per cent, and carry forward over 6000. Central Illinois went to 87, and Erie shares closed at 87. Roman Gravel were again offered, and will soon, unless a recovery sets in, be little over par. Buyers to-day were unwilling to give more than 9½. Van Consols and Glyn were quoted 5s to 7s 6d, the former "made up" at 2s 6d. Parys Mountain being found scarce went up to 11s, 13s. Knapana, 2s to 2½; Sierra Buttes, 1½ to 1½.

THURSDAY.—The directors of Great Lacey have declared a quarterly dividend of 6s per share, and a bonus of 2s payable on the 24th inst. The shares are 20 to 21, and can be bought to pay nearly 10 per cent. When this dividend has been paid each 4s share will have received back 22 2½. In other words, an expenditure of 60,000, will have produced a profit of 30,000, and is represented itself by something like 300,000. The Cipe Copper accounts for the year have been issued, and show that the value of the ore raised during last year was over 240,000, leaving a net profit of 90,000. Of this 8,000 has been divided among the shareholders (4s per share), and a large balance carried forward. The dividends received here on each 7s share up to the present time has been 28 1½. Private accounts from Cairo mention that the sums necessary for the payment of the coupons of the United Debt due on the 15th inst. have been encashed.

FRIDAY (Opening).—The railway market is very firm. Dover, A, is up to 11s, and Brighton, A, to 107. The Brighton dividend is expected to be known to-day. In mining shares North Lacey are rather better, an improvement at the mine being reported. Roman Gravel is stronger, and quoted 8½ to 9½. Everhardt dull at 6½ to 6½. Pateley Bridge, 1½ to 2. Biddis, 3½ to 4. Van Consols, 10s to 11s. Glyn, 6s to 7s. Penarth, 4s to 5s. Chapel House, 2½ to 3. Eschquer, 3s to 3s 9d. Aberdeen, 10s to 12s. 6d. East Van, 5½ to 6. West Tankerville, 7½ to 8; ditto Pref., 1½ to 2. Glenroy, 1 to 1½. North Lacey, 15s to 16. Parys Mountain, 10s to 12s. 6d. —Two o'clock.—The market continues firm in tone, railways especially. The Brighton dividend has been received, and proves to be one of 3 per cent. The Sheffield dividend has also been circulated, and is 1 per cent.—as usual a surprise. Egyptian Preference have been paid, below 90, but are now 60½ to 62½. Russian, 4s to 4½. Egyptian, 4s to 5s. Alton, 8s to 8s 6d. Malabar, 4s to 5s. Eschquer, 3s to 3s 9d. Biddis, 3s to 4s. Pateley, 1½ to 2. Javell, 8s to 10s.

Chionates, ¼ to ½. Don Pedro, ¾ to 1. Four o'clock, Dover, A, has reached 113, which is a rise of 1 per cent on the day. Districts are better. Pennerley, 1 to 1½. Tankerville, 7½ to 8. Bampfield, ¾ to 1. Cedar Creek, ¾ to 1. Gold Run, ¾ to 1. London and Yorkshire Bank, 1½ to 1½ (2d. 6d. paid). Birch-lane, July 13. FERNAND R. KIRK.

Mining Correspondence.

BRITISH MINES.

ABERDAUNANT.—S. To, July 11: The new shaft is sunk 5 fms. 3 ft. below the deep adit level. In the east part of the set (Crownin) I have set the cross-cut to drive towards the new lode, by six men and one boy, at 10s. 10s. per fathom, for the month. There is no change worthy of remark during the past week.

ASHHETON.—John Craze, Joel Manley, July 12: The lode in the 60, east of boundary, is large, composed of spar, with good spots of lead ore. No change in the 50, east of Mair south, on north and south lode, since our last. The lode in the 20, east, on north and south lode, has very materially improved; now worth about 12s. per fathom. No other change to note.

BEDFORD UNITED.—R. Gollisworth, William Philip, July 10: Since the last general meeting, our new shaft sunk 7 fms. 5 ft. The 127 fms. l.v.l. is driven east 7 fms. 1 ft. 3 in.; west, 8 fms. 2 ft. The 115 fms. level east 7 fms. 4 ft. 9 in.; west, 6 fms. 5 in. The 101 fms. level east 4 fms. 2 ft. 10 in.; west, 3 fms. 5 ft. The 47 east, on the south lode, 3 fms. 5 ft. 3 in. The winze sunk in the 103 east 3 fms., and in the same level west another winze 11 fms., making a total of 64 fms. 1 ft. 4 in. The engine shaft is now down to the 138, but we intend to sink 1 ft. deeper for a fork. Throughout this depth (11 fms.) the shaft has been very productive, the average value of the lode being 67s. per fathom for the length of shaft. The lode in the 127 east has been disordered for some distance, but is now looking more kindly, and producing good stones of ore. In this level west the lode is worth 10s. per fathom, and promising for further improvement. The lode in the 115 east is again improving, at present worth 12s. per fms., and no doubt will become more valuable as the end approaches the winze from the 103 east; in this level west the lode is producing stones of ore, not sufficient to value. The lode in the 103 east has a very promising appearance; it is composed of congealed calc., quartz, maulie, and copper, letting out water freely, and is now looking more kindly, and producing good stones of ore. In this level west the lode is worth 10s. per fathom, and promising for further improvement. The lode in the 115 east is again improving, at present worth 12s. per fms., and no doubt will become more valuable as the end approaches the winze from the 103 east; in this level west the lode is producing stones of ore, not sufficient to value. The lode in the 103 east has a very promising appearance; it is composed of congealed calc., quartz, maulie, and copper, letting out water freely, and is now looking more kindly, and producing good stones of ore. In this level west the lode is worth 10s. per fathom, and promising for further improvement. The lode in the 115 east is again improving, at present worth 12s. per fms., and no doubt will become more valuable as the end approaches the winze from the 103 east; in this level west the lode is producing stones of ore, not sufficient to value. The lode in the 103 east has a very promising appearance; it is composed of congealed calc., quartz, maulie, and copper, letting out water freely, and is now looking more kindly, and producing good stones of ore. In this level west the lode is worth 10s. per fathom, and promising for further improvement. 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TO THE METAL TRADE.

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MESSRS. PELLY, BOYLE, AND CO.,
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(ESTABLISHED 1849.)

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Original Correspondence: Commerce in the Superior Metals—First Six Months of 1877; Proposed National Society of Colliery Managers (Tom P. Martin); Mining in the East—No. XLV.; the Cape Copper Company; the Yorkshire Peninsula Mining Company; the Amazonas Gold Quartz Mining Company, and the Hydraulic Mining Company of Catapico, Chili (H. Sewell); Exchange Gold and Silver Mining Company (F. W. Mansell and Co.); Lead and Blende Ores—Haitfall Mine; Mechanical Puddling; the Copper Trade and Cornish Mines; the Royal Agricultural Show at Liverpool; Mining in Cardiganshire—Llanengan District; the Cambrian Mines—Cardiganshire (R. Tredinnick); Cardiganshire Mines, A.D. 1877—No. XIX. (A. Francis); South Park of Mines; Cwm Dwyfod; Wheel Grenville; Death of a Faithful Cashier; Balance Sheet; Effects of the Mining Depression; A Good Bad Makes a Good Cap; Roman Gravel Mining Company (F. F. Wilson); Capt. Tregay, and Pedan-drea Mine; West Maria and Fortescue Mines; Cornish Mining, and its Unwrought Ground (C. Bawden); the Scotch Mining Share Market—Foreign Mining and Metallurgy—Foreign Mines—Mining in Australasia, Monthly Summary—Australasian Mines—Registration of New Companies—Meetings of Bedford United, South Canadian, Trebrich Consols, Marke Valley, Nerbudda, Cape Copper, Tankerville, and West Tankerville Companies, &c.

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, JULY 13, 1877.			
IRON.			
Pig, amp, f.o.b., Clyde.	£ s. d.	£ s. d.	
Scottish, all No. 1	2 15 0	3 6 0	
Dars, Welsh, f.o.b., Wales	5 10 0	5 12 6	
" in London	6 0 0	6 2 6	
" Stafford.	7 10 0	8 15 0	
" in Tyne or Tees	5 10 0	6 0 0	
" Swedish, London	9 10 0	10 0 0	
Rails, Welsh, at works.	5 0 0	5 5 0	
Railway chairs	—	—	
" spikes	—	—	
Sheets, Staff., in London	3 15 0	9 0 0	
Plates, ship, in London	7 5 0	7 10 0	
Hoops, Staff.	7 12 6	8 0 0	
Nail rods, Staff. in Lon.	7 5 0	7 12 6	
STEEL.			
English, spring	14 0 0	23 0 0	
" cast	15 0 0	25 0 0	
Swedish, keg	16 0 0	—	
" fag, ham.	17 0 0	—	
LEAD.			
English, pig, common	20 2 6	20 7 6	
" L.B. nom.	3 0 0	—	
" W.B.	21 0 0	—	
" sheet and bar.	21 7 6	21 10 0	
" pipe	22 0 0	—	
" red	22 5 0	22 10 0	
" white	27 5 0	28 0 0	
" patent shot	24 10 0	—	
Spanish	19 15 0	23 0 0	
QUICKSILVER.			
Flasks of 75 lbs., ware.	7 5 0	—	
SPELTHER.			
Blesian or Rhenish	19 10 0	—	
English, Swansea	21 0 0	—	
Sheet zinc	23 10 0	24 10 0	

* At the above prices, 1 lb. to 1 lb. 8 d. per box less for ordinary; 10s. per ton less for Canada; 1X 6s. for box more than above, and add 6s. for each X.

Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS.—The general appearance of business is more unsatisfactory than ever, amounting almost to utter stagnation, and our markets have now sunk into a most lifeless and gloomy condition. In the absence of demand prices in many instances are nominal, and holders will probably experience a hard time of it yet, for without improvement prices must go lower from want of support, and in the event of the depression continuing much longer, or any material decline in prices taking place, it is very questionable whether the majority of holders would be able to maintain their position, for where advances have been taken forced sales would have to be resorted to. Capitalists may not be greatly inconvenienced by the present inactivity in trade, because they can afford to wait for better times; but it is a very different matter for the mercantile community generally, and it falls heavily upon those whose incomes are limited, and who are caught with stocks, and unfortunately they are numerous, and their resources must already have been taxed to the utmost by the constant depreciation and depression of trade. It would have been better if many of these small holders had reduced their stocks before, and followed our advice when prices were higher, for by so doing their losses would have been to a great extent avoided, for independent of the running expenses, such as rent and interest, the prices of metals are mostly lower, and we still strongly urge those who are clinging to their stocks to adopt our recommendation and realise at once.

There will be no general revival in trade yet awhile, for operators will certainly make no important move until the chief cause for their abstinence is removed, and as long as the Eastern Question is alarmingly increasing, and may assume a still more serious aspect, and will evidently be greatly prolonged, there is little or no hope of amendment, but, on the contrary, a decided tendency to decline. Under present circumstances great circumspection is, therefore, necessary on the part of buyers, and they should not be affected by every little incident of the war, but quietly repose until the terms of settlement are known, because much depends upon the ultimate moderation of Russia as to whether or not England will render material assistance to Turkey. In such a state of uncertainty extended transactions are quite out of the question, and all orders will be held largely in abeyance, but it is better to do nothing than to incur losses. A loss at the present time is not easily recovered, on account of the limited number of orders and the small percentage of commissions, and the slight variations in prices affording no opportunity for speculation; every available chance, in fact, of making up loss is closed for the time being, and, therefore, every possible precaution should be taken to avoid them. All transactions should be for cash payment, and credit beyond 14 days should not be given. Payment by acceptance is always an objectionable mode of settlement, and ought not to be resorted to for shipping business, since the various foreign banks give all necessary facilities for conducting legitimate business. The only safe way of dealing is by having cash payment against documents, and this is, happily, becoming very general now in most metals.

COPPER.—At the beginning of the week a large business was reported in Chili bars at 6s. 10s. for g.o.b.s., to 70s. for special brands, and as soon as the business became known it produced a favourable impression upon our market, not so much on account of the price realised, because that was an unprofitable one, but owing to the fact that sound buyers could be found at the present time willing to enter into such transactions. This had the effect of bringing out other buyers in Liverpool on Wednesday. It is hoped that their excellent example will have a further stimulating effect upon more timid buyers, and that they will come forward quickly and buy freely. Sellers, however, have done well in part, and the copper, although it was probably attended with some sacrifice, yet better times could not be obtained, and to hold out for a higher price was perfectly useless, and only increasing charges unnecessarily, besides it had been held quite long enough, rather too long in fact, and the strength of the market had been thoroughly ascertained and tested beforehand. All efforts to effect a rise had completely failed, and it only remained for holders to lighten their stocks with a little delay as possible, and like sensible men they availed themselves of the opportunity when it presented itself, and should a similar chance occur again, importers cannot do better than embrace it, for there is nothing but ever in the present state of our market or of trade generally to look for any particular improvement, and during this very quiet season prices are a great deal more likely to decline than to advance.

According to the Board of Trade Returns for June, the exports of this metal compare unfavourably with those of the previous month, and the first six months of this year are also below those of 1876, whereas the imports of bars, ores, and regulus are between 14,000 and 15,000 tons in excess of last year, and nearly 14,000 tons more than in 1875. It is anything but promising to find imports increasing and exports decreasing, while stocks are excessive; and it is rather surprising that sellers have been enabled to realise such good prices, and very extraordinary that buyers should have made a premature step in coming forward just when prices were on the eve of a fall; but now, perhaps, that a few pressing wants have been supplied, the market may get easier. The advices from New York on the 30th ult. are less favourable than previous reports, and ingots for present delivery are only in slight demand, with sales of L. ke as low as 19½ to 19½, and Baltimore 19c. By last month's mail from Bombay it is stated that copper and yellow metal are both in sellers' favour, and the Calcutta market is said to remain strong in tone, but as prices are still considerably below the parity of home values, holders manifest little disposition to realise. Australian copper keeps very steady in value, especially Warraroo, which can only be bought at fancy prices; but, as there are substantial reasons for expecting a temporary diminution in supplies, there is no anticipation of any immediate abatement in price, particularly as the entire stock is under the control of a very able firm.

IRON.—Prices continue to droop in manufactured, and merchant bars of common quality are now offering at 6s. per ton in London. Staffordshire is also to be obtained cheaper, but orders keep so very scarce that there is next to nothing doing, and it seems as if the markets would have to drag on for some time longer in a similar condition. A little additional demand will probably be experienced as the autumn approaches, but after that time we shall be getting into a dull season again, when still lower prices may have to be taken. The accounts from

the inland iron districts are discouraging, and it is said that the markets a real-estate for the common qualities of pigs, on account of the competition of Cleveland and Derbyshire makes. Production is being reduced, and yet the supply is in excess of the demand, and stocks are increasing. Shipping orders are few, and the works are only kept going by the local demand, which, however, is considerably below the average. The reduction in the Bank rate does not appear to have had the slightest effect either in the demand or price, and there is really no improvement whatever in the condition of the markets. Middlesbrough pig-iron shows no improvement, and prices are easy. In Leeds the iron trade is very dull, and at Rotherham very little alteration has occurred, and most of the works are scantily supplied with work. Numbers of workmen are reported to be only partially employed, and some are entirely out of work.

From South Durham quiet markets are reported, and stocks of pigs have increased over 1,000 tons in makers' hands; and stores and the present stock is about 246,000 tons. On the 10th the North of England Iron Trade held their quarterly meeting at Middlesbrough, when very little business was done, and the market was flat. Prices of pigs, No. 1 quoted 44s. 6d. to 45s.; but the tendency is in favour of buyers. The manufactured trade is discouraging, and sales are made at very unremunerative figures. The iron plate makers are scarcely so busy, and prices appear to be drooping. The Staffordshire ironmasters held their quarterly meeting at Birmingham on the 12th inst., but no alteration was made in quotations. The French iron trade is unaltered, and prices are steady. The Belgian Government are waiting rails. The New York market continues dull, and prices are nominal. Coltness quoted \$27 50c.; Glengarnock, \$25 70c.; and Eglinton, \$24 00c. In American pigs the market tends downwards. Scotch pigs have ruled steady, and in n. are now quoted about 54s. 2d. cash.

SHIPMENTS.		Tons	1877
Week ending July 7, 1877		11,217	
Week ending July 8, 1875		7,092	
Increase		4,125	
Total increase for 1877		7,458	
Imports of Middlesbrough pig-iron into Grangemouth:—			
Week ending July 7, 1877		6,200	
Week ending July 8, 1875		4,155	
Increase		2,045	
Total increase for 1877		36,288	

LEAD.—The market is easy both for English and foreign. The imports for the first six months of this year are 50,638 tons, against 38,542 tons in 1876, and 38,827 tons in 1875, and the exports for the same period are 19,119 tons for 1877, 18,293 tons for 1876, and 14,272 tons for 1875.

QUICKSILVER.—Our market is quiet, but prices are unaltered. The quantity imported up to June 30 this year amounted to 2,810,768 lbs., against 2,358,382 lbs. in 1876; and 2,049,754 lbs. in 1875; and the exports for the corresponding periods are 1,265,934 lbs. in 1877, 948,566 lbs. in 1876, and 687,448 lbs. in 1875.

STEEL.—Our market is very quiet, and prices are the same as before. English is particularly dull, and the local industry of Sheffield in many branches continues to diminish. The demand for the lower qualities of cast and Bessemer steel is extremely limited. There is not much doing for the English railways. The cutlery trade is depressed, and the edge tool and file trades have not in any way recovered. The Belgian Government is stated to be about to let contracts for the delivery of 10,000 tons of cast-steel rails of the ordinary Vignoles section.

TIN-PLATES.—The demand is unimproved, and sellers cannot realise any higher prices than last. The decline, however, in tin and iron will prove very acceptable to makers, and as there seems to be some unanimity existing amongst the principal works in regard to production, prices will probably keep steady.

TIN.—The market has been in a very weak state, and prices falling, but not sufficient to offer any inducement to buyers to take more than trifling quantities. The quantity on the way from Australia is large, and it is expected to depress prices upon its arrival, although the greater portion is said to have been already sold. The Dutch Trading Company's sale of 23,000 slabs of Banca, which is advertised for the 31st, to be held at Amsterdam, also tends to weaken prices. From Rotterdam the advices are unfavourable, and Banca is quoted 42½ fls., and Billiton 41 fls., but sales of Banca for delivery this month are reported at 42½ fls. By the mail from New York on the 30th ult. we learn that there is very little enquiry for tin, and that stocks are increasing, owing to the imports during June being heavy. The total imports of tin during the first half of the month are less than the preceding years, but the exports are smaller, and not half what they amounted to in 1875. Prices to-day are again lower, and the market closes in active.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday Evening. The Glasgow iron market closed after the morning meeting on Thursday until Tuesday next, it being the Glasgow fair holidays. There is virtually no change in price this week at Glasgow, the price being 54s. 3d. G.M.B. warrants. We quote makers' No. 1 iron:—Garthrie, 62s. 6d.; Coltness, 55s. 6d.; Calder, 62s. 6d.; Lurgan, 62s. 6d.; Summerlee, 60s.; and Monkland, 55s. 6d. f.o.b. Glasgow; Glengarnock, 55s. 6d.; 55s. 6d.; Shotts, 63s. f.o.b. Leith; Kennel, 55s. f.o.b. Bo'ness. The July Quarterly was held this week at Wolverhampton and Birmingham. The Wolverhampton Exchange was only thinly attended on Wednesday, and, as usual, business was left in abeyance until next day. The Quarterly day held on the Birmingham Exchange on Thursday was by no means larger than usual; on the contrary, the aggregate number was much below the usual average, the falling off being in plate makers and Welsh ironmasters. There were only two firms represented from the Middlesbrough district. There was very little done in pig-iron of any kind, although all kinds felt the change made by the Madeley Wood and Lillishall Company in Shropshire. There was very little business done in hematite pig-iron; prices for this class were unchanged. North Staffordshire pig iron was 2s. 6d. per ton lower, and the Northamptonshire smelters, whose business was done, had to submit to a commensurate reduction. There was no official change in finished iron. Marked bars remained 9s. per ton, with 9s. 12s. 6d. for the Earl of Dudley's. Second-class bars will probably be sold a little lower. The sheet-iron makers made no reduction at all, nor are they likely to do for the present. Our own market remains quiet; prices nominal, with very little business doing. The Bank of England yesterday reduced the rate of interest on bills to 2 per cent. per annum. Tin giving way; Australian sold to-day at 69½, 10s., Straits 67½. Spelter weaker, no buyers in the market.

The MINING SHARE MARKET continues without any material alteration, and the dealers have been chiefly occupied in the settlement of the fortnightly account.

A few transactions have taken place in Roman Gravel, Tankerville, Rookhope, Great Laxey, North Laxey, East Van, Parya Mountain, Leadhills, Glenroy, West Tankerville, and others, but prices generally are merely nominal.

TIN MINES continue dull, and scarcely a transaction has taken place in them. Dulcouth are quoted 28 to 30; Carn Brea, 28 to 30; Tincroft, 13 to 15; Cook's Kitchen, 1 to 1½; Wheel Grenville, 1½ to 2; the sale of tin (15 tons) realised 42½. 12s. 6d. per ton = 639s. 7s. 6d. Wheal Pevor, 3½ to 4; the engine shaft is down 79 fathoms. The 70 and south is worth 20s. per fathom. The 60 west is worth 30s. per fathom. The mine is opening out well, and returning about 20 tons of tin per month. At Wheal Prussia meeting in Cornwall a dividend of 1s. per share was declared. The sales of tin (21 tons) realised 96s. Costs, 588s.; dues, 55s. Credit balance after payment of dividend (300s.) 49s. Penrithal, 4s. to 6s. South Condurrow, 7½ to 8; South Crofty, 10 to 11; West Frances, 2 to 2½; Wheal Kitty (St. Agnes), 1½ to 2; Wheal Uny, 1 to 1½.

As to **COPPER MINE** shares, South Canadian are quoted 110 to 120; at the meeting the accounts showed a profit of 1061s., and a dividend of 2s. per share (1024s.) was declared, and a balance of 2261s. carried forward. The copper ores sold realised 9598s. The mine is reported as looking well, and likely to continue so. Bedford United, 7s. 6d. to 10s.; at the meeting the accounts showed a balance against the mine of 432s., and a call of 1s. per share was made. The company is to be formed into one of limited liability. Devon Great Consols, 4½ to 4½ ex div. East Caradon, 3 to 4; call of 2s. paid. Marke Valley, 1½ to 1½; West Seton, 29 to 31; West Tolgus, 61 to 63. Wheal Crebor, 1½ to 2; the lode in the 120 east is worth 20s. per fathom, stope in back 8s. Parya Mountain have been in fair demand at 11s. to 13s.; Tolgus Consols, 5 to 5½.

In **LEAD MINES** Great Laxey shares are quoted 20 to 21; the directors have declared a quarterly dividend of 8s. per share, and a bonus of 2s. per share, together 7500s., payable on the 24th, and have also carried a further sum of 1000s. to the reserve fund. Roman Gravel, 8½ to 9½; the accounts referred to in this article last week were, as we stated at the time, for the financial year ending Jan. 31, and when we wrote were the only accounts made known to the shareholders. They were accompanied by the directors' report, dated June 22, which referred to the balance of 5691s. 1s. 9d., out of which the dividend had been declared, and added that owing to the unexpected return of acceptances for 1797s. 17s. 6d. it was "rendered necessary to postpone the distribution of profits;" that is, the dividend previously declared. The supplementary accounts, showing that the dividend had since been paid, were not even alluded to in the directors' report, and only referred to at the meeting. Tankerville shares have fluctuated from 7½ to 7½, and leave off 7½ to 7½. West Tankerville, 17s. 6d. to 20s.

North Laxey have improved to 1; the lode in the shaft is

3 ft. wide, and improving for lead. In the 70 cross-cut a branch has been intersected 18 in. wide, with lead and blende intermixed. The 60 stopes are worth 1½ to 2 tons lead per fathom. Rookhope, 20s. to 22s. 6d. Van, 33 to 35 ex div. East Van, 5½ to 5½; Tempest's shaft is down 14 fms. 1 ft. below the 25, and a branch of the lode 5 ft. wide has come in on the north side. Pateley Bridge, 2½ to 2½; in the 30, on Rake vein, the lode is 6 ft. wide, 2 ft. good solid ore, worth 2 to 3 tons per fathom. From the way in which the mine is now opening out the agent states he has no hesitation in promising that he will be able to meet costs at once. Aberdaunant, ½ to ½; Llanwrst, 2 to 2½; Leadhills, 5½ to 6½; Pennant, 5 to 5½; Gorse, 5 to 5½; Pennerley, 11-16ths to 13-16ths; Plynllymon, 4s. to 6s.; Denbighshire, 1½ to 1½. Herodsfoot, 3 to 4; at the meeting in Cornwall the accounts showed a loss on last month of 53s., and a balance of assets over liabilities of 1356s. The costs charged to April 28, Van Consols, 5s. to 10s.; West Chiverton, 14 to 16; West Craven Moor, 11 to 12; Great Dyliffe, 3 to 4; Grogwinion, 3 to 4; West Craven lode, 2 to 3; Red Rock, 2 to 2½; South Cwmystwith, 3 to 4; St. Harmon, 3 to 3½; Wye Valley, 3½ to 4½; West Wye Valley, 3½ to 4½; West Goginan, ½ to 1; ditto (pref.), 1 to 1½.

Among **FOREIGN AND COLONIAL MINES** Cape Copper are quoted 36 to 38; the accounts show a profit of 90,079s. 8s. for the year 1876. The copper ores sold realised 243,790s. 8s. 5d. The dividends paid have been 80,000s. for the year, 3500s. carried to landed estates and building fund, and a balance of 5580s. carried forward. Chontales, 3 to 4; the advices this month show a loss of 60s. 5s., which includes 56s. for construction. Javali, 8s. to 10s.; the advices here show gold return 1030s.; cost per month, 913s. 10s. 3d. Argentine, 4½ to 4½; Blue Tent, 3 to 3½; Condes, 2½ to 3½; Hultafall, 5½ to 6½; Almada, ½ to ½; Cedar Creek, ½ to ½; Eberhardt and Aurora, 6½ to 6½; Exchequer, 5s. to 7s. 6d.; Flagstaff, 3 to 3½; Frontino, 2½ to 2½; New Zealand Kapanga, 2½ to 2½; Last Chance, ½ to ½; Malpas, ½ to ½; New Quebrada, 1½ to 2; Port Phillip, 9s. to 11s.; Richmond, 6½ to 7; St. John del Rey, 250 to 270; South Aurora, 3s. to 5s.

The Market for Mine Shares on the Stock Exchange during the week has been quiet, chief attention having been occupied with the fortnightly settlement, which was completed yesterday (Friday). On the whole, the market may be said to be favourably disposed, but there are few movements in quotations.

The prospectus of the \$700,000,000 (140,000,000) United States Government New Four per Cent. Funding Loan will be found in another column of this day's Journal. Messrs. Rothschild, Messrs. Morgan, and the other members of the syndicate. The price of issue is 102½. 15s. per \$500, the amount being payable by instalments extending to Dec. 17 next; the price is, therefore, almost exactly par. The bonds which cannot be redeemed until 1907, or for 50 years, are to be issued for sums of \$50, \$100, \$500, and upwards. As the issue is little more than a conversion it is scarcely likely that, however large the subscriptions may be, any material effect will be produced upon the money market—indeed, many look forward to an improvement from the placing of the loan, and the Times remarks that, should the United States Government apply a considerable sum from the proceeds to the redeeming of the green-back currency, there would be at least a temporary holding back in the supply of the precious metals, or a withdrawal of them from the European monetary centres to an extent which would not be unhealthy at the present time. The 1887 Six per Cent. Bonds are the only American securities likely to be adversely affected by the new loan, and that merely because it will ensure their being paid off when due. The subscription lists will be closed on Wednesday next. The principal and interest are exempt from all taxes or duties of the United States, as well as from taxation in any form by or under State, municipal, or local authority. Subscribers will receive scrip, and interest at the rate of 4 per cent. per annum will be allowed on the instalments from their due date to Dec. 31, 1877, and a coupon for the amount, payable on Jan. 1, 1878, will be attached to the scrip. The interest on the first instalment will date from the 25th inst. The bonds may, at the option of the holder, be inscribed, and United States Treasury cheques for dividends thereon will be sent from Washington to the registered address of the holder in any part of Europe, on the principle adopted by the Bank of England in paying the interest on Consols. An officer of the United States Treasury will remain for some time in London, to inscribe, free of charge, the bonds into the names of such holders as may desire it.

The Clogau Mine report, just issued, states that during the month work has been continued on the branch lode on the top of No. 1, where there has been some good visible gold. The lode appears to get larger and stronger in depth, but it is not so rich as when work was first commenced on it. In the stope in the end of No. 7 mine there have been several bands of hard white quartz. These have been cut through, and the stope is a kindly lode, strong in bismuth. The manager says they may expect any time to cut visible gold at this point. The end driving west in the 5 is much disordered, owing to the proximity of the fault, but they hope so be through the fault and to put in a cross-cut during the present month. There have been two parties opening out of the different lodes west of engine-shaft. Nothing has been struck out to the present time rich enough to report. The mill has been idle for want of water during the greater part of the month; not sufficient stuff has been crushed to concentrate for market. The direct amalgamation in the Britten pan has yielded 177 ozs. of amalgam, giving a bar of gold 41 ozs.

Scottish Australian Mining, 1½ to 2. Yorke Peninsula, Preference, 1 to 1½; the arrangements made at the recent meeting, the improving character of the lodes in the Kurilla, and the importance of the other properties are attracting a deal of attention to these shares, Scottish Australian investment, Ordinary, 180 to 190; Six per Cent. Preference, 125 to 130.

St. John del Rey, 250 to 270; the latest telegram received, dated Rio, July 11, states the produce for the month of June to be 36,000 oits. of the value of 13,950s., the l-y of the ore being 7-1 oits. per ton. Don Pedro, 3 to 4; the produce for June was 7100 oits. The last advices state that all the works are going on well, but slow in progress owing to the force being small.

Richmond, 6½ to 6½; the manager's report states that the ore discovered at the end of the 500 drift has been opened on 40 ft. in length and 12 ft. in width, but the ore so far as seen is of low grade, but he adds his opinion that the ore now seen is the top of an ore body on which they were preparing to sink, when he anticipates an improvement in grade. The rise in the first westerly discovery has been continued to a junction with the 400 drift. The No. 2 rise was up 25 ft. with long grade ore in back. A cross-cut from the end of the 500 drift was being driven to cut the ore which is dipping over the drift in that direction. The 600 drift being in hard ground has not yet reached the winze sunk from the 500; the ventilation, therefore, is not yet completed. Everything else is at a standstill awaiting the coming judgment. Prof. Whitney, the eminent geologist, has been engaged as a witness by the Richmond Company, and on Saturday last was at Eureka with Clarence King examining the mines. The suits to be tried are claims in equity to sustain the interim injunctions the Eureka Consolidated Company have obtained on the one part against the Richmond Company, and the latter on their part against the former; it is understood to be by mutual agreement between the respective parties that the other issues involved will be settled by the decision in these injunction suits. Within a few days of the coming 23rd the judges will probably give their award. It is stated that the accounts are in the hands of the auditors, who have nearly completed their investigation.

In connection with the South Aurora (Nevada) Mining Company, whose business, it will be remembered, is confined to working mines in Corsica, the secretary reports that general and special meetings of the Lama and Olmetta Companies were held in London on Wednesday, and that the reports, balance-sheets, and resolutions were unanimously adopted. Had the press been informed of the intention to hold the meetings the proceedings might have been reported, which would certainly have been more satisfactory to the South Aurora shareholders. No ore appears to have been sold from either company's mines, though the purchase price of the properties was 162,500s. The Lama Company has expended 2098s. 4s. 6d.

M R. J. S. M E R R Y,
ASSAYER AND ANALYTICAL CHEMIST,
SWANSEA.

Notices to Correspondents.

* * * When inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be sent on receipt; it then forms an accumulating useful work of reference.

RUBY CONSOLIDATED MINING COMPANY.—It is a long time since information in reference to the above company appeared in your esteemed Journal. Can any of your numerous correspondents enlighten one as to the present position and prospects?—A CONSTANT READER: July 10.

FOREIGN MINES.—"R. E. W." (Leeds).—We never interfere in the negotiation of sales or purchases of mines or mine shares of any kind. Many of the shareholders, however, whose advertisements appear weekly in the Journal, undertake that class of business, and to these "R. E. W." would do well to apply. It would be unfair to recommend anyone in particular, and it is unnecessary, since the exchange of the usual banker's references is always sufficient in commercial affairs. Should "R. E. W." have particulars of the mines or districts of general interest they will be published without charge.

LIABILITY IN COAT-ROCK MINES.—I shall be glad if some correspondent will furnish information as to the position and prospects of the Drake Walls Mine. Is it correct that the Statutes Laws prevent a concern being wound up on the petition of a shareholder, and that relinquishment of shares is the only mode of obtaining release? In the case of Drake Walls all after call has been made, and there seems no prospect of an end of them, yet the mine has disappeared from the Share List, and is said not to be really at work. I should like to know the state of the law I have referred to, the names of the promoters and directors, the position and probable prospects of the mine, and the cause as far as known of the apparent collapse? The shareholder not having signed anything is he bound to continue to pay calls?—J. G. H.: Saltcoats, July 9.

NORWEGIAN SUBSCRIPTIONS.—"J. D. H." (Kaafor).—We have had no previous complaint of overcharge by the Norwegian Post Office, though many copies of the Mining Journal are sent into Norway each week. "J. D. H." does not say whether he pays his subscription to a Norwegian or English house. We address him this day's Journal in red ink, and post it in the usual way. If there be any surcharge on delivery he will oblige by letting us know; if not, he can so obtain it at 10. 4d. per annum, payable in advance by International Post Office Order, or ordered through the London office of the works he is connected with.

Received.—"F. M. F. Carin (Bernalillo, N. M.)."—"G. W. B." (New York).—"M. P."—"F. M."—"T. W."—"Shareholder" (Van Consoles) should attend the meeting next week—"Reader" (Glasgow). We could not publish such a letter without the writer's name being appended—"Veritas" (Bristol).—"S. C."—"The matter will be attended to"—"J. H. J." (Grampound-road): A letter sent to the office will be forwarded to Mr. George Henwood—"Adventurer" (Redruth) had better send his letter to the person addressed—"Shareholder" (Wheal Uny): Refer to Mr. Ashmead's Table of Prices, which appears in another column.

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, JULY 14, 1877.

THE DURATION OF OUR IRONSTONE FIELDS.

On all hands it is admitted that the prosperity of the Coal Trade greatly depends on that of iron, the two combined having been the principal levers in raising England to her commercial greatness amongst the nations of the world. This was plainly shown a very few years ago, when both advanced in price at the same time, and almost to the same extent, whilst it was stated by those connected with both trades most extensively that the special manufacture which led to the demand for coal being for a time far beyond the power of producers to supply, and to the great advance in price, was the marked increase in the make of pig, and its conversion into bar and rolled iron generally, and steel, principally for the United States and the Continent. Ironstone is, then, the largest consumer of coal we have, taking it from its introduction to the blast-furnace through its various stages, until it is made into merchant iron, and steel of every description from the Bessemer rail to the watch spring. From the first process to the last it requires close upon one-third of all the coal raised in the United Kingdom. In 1872, certainly a busy year, the quantity of coal used in the manufacture of pig alone was 21,000,000 tons, whilst nearly as much would go in the other processes. It is true, however, that the consumption of iron ore does not go on increasing from year to year in the same relative ratio as coal does, and it may, perhaps, be as well that it does not increase so much, at least with our present somewhat limited knowledge as to the extent of our supplies at home, for we are certainly not aware of any official attention worth speaking of having been paid as to our available stores. At the present time our iron ores are plentiful and cheap, and in all probability will continue to be so, but despite such advantage we consider that were our information with respect to the probable duration of our stores of them more definite and reliable than what it now is, it could not be otherwise than both valuable and interesting. In importance to all classes in the country our products drawn from ironstone cannot be over-rated, being scarcely second in that respect to coal, of which we know so much, owing, in a great measure, to the vaticinations made a few years since by some gentlemen with respect to the time when our supplies of it would be exhausted, and to the variety of opinions that prevailed on the subject by our ablest geologists.

It was owing to these diverse views on a matter of the gravest character to the future of the country that we had the Royal Commission appointed by Her Majesty to enquire into the coal resources of Great Britain and matters connected with the consumption of coal. On that occasion evidence was given by the ablest experts in the kingdom on the question. But the Commission went further, and appointed the most eminent geologists and mining engineers we have had to investigate the extent of the various coal fields in the kingdom. The result was the production of able and exhaustive tabulated reports, giving the calculated quantities of coal down to a depth of 4000 ft. from the surface, both of the visible and concealed coal fields in Great Britain and Ireland, from all workable seams of 12 in. and upwards. Now, if such valuable information can be obtained concerning coal, surely there ought to be less difficulty in obtaining similar returns relating to ironstone, the annual yield of which is little more than one-tenth of the former. We might then have side by side valuable statistics showing the probable time when our known stores of coal and ironstone would be getting exhausted. The question of the probable exhaustion of our coal fields has been a favourite one with many eminent men, but very few indeed appear to have paid similar attention to iron ore, which we should say is even less complicated. So far as we can judge, there are reliable data to go upon, so as to say whether in some of our most important districts the coal or the ironstone will be first worked out. It would appear, however, that Mr. ISAAC LOWTHIAN BELL, one of our highest authorities, has had the subject in his mind, for, when giving his evidence before the Select Committee on coal, he said—"As a matter of curiosity, I may state that I made a calculation one day, and I made out that it would take the whole of the coal of the counties of Northumberland and Durham to smelt the ironstone in the Cleveland hills—that is, supposing all were used for making iron alone, but our coal fields will be exhausted long before the iron field is." This is an important item in itself, seeing that Cleveland is the most extensive field we have, raising more than one-third of all the ore smelted in the kingdom.

But there are other districts where the coal and the iron are close together, the extent of which it is most desirable should be known—such, for instance, as those in Cumberland and Lancashire, where the valuable deposits of fine hematites are so well suited to converting into Bessemer. There are also other localities where coal is extensively raised and iron produced, but where the ore is becoming exhausted. This would appear to be the case in South Wales, where the quantity in that part of the Principality and Monmouthshire fell off from 1,247,594 tons in 1872 to 495,840 tons in 1875. But in South Wales it may be said that the lower coal measures are the chief repositories of the ironstone, and in some places are not more than 5 in. in thickness. The consequence is that large quantities of ore have to be imported from Northamptonshire and other districts. In some other localities where there is also coal the production of ironstone has been very far below what is required for the furnaces, and this is particularly the case with respect to Derbyshire, which imports more from Northamptonshire

than is raised within its own limits. The blackband ironstones of the Clyde coal basin that have done so much for developing the mineral wealth of Scotland were discovered by DAVID MUSHET at the commencement of the present century, but are now nearly worked out, so that of late years there has been a considerable falling off in the quantity raised, the difference in three years having been no less than 827,745 tons, or more than 25 per cent. North Wales contains several fields of hematite and other qualities of ore, but they do not appear to be much known or worked, for the quantity raised is considerably below the output of pig made.

Coming to the ironstone fields that are at a considerable distance from the coal districts, our information with respect to them is even less than those that we have previously alluded to. The most important of these is that of Northamptonshire, extending in one direction in an almost straight line for something like 40 miles, in some places there being a thickness of 30 ft. of stone, giving 40 per cent. of metallic iron. How far the beds extend we are unable to say, but they evidently go into the adjoining county of Rutland, and in all probability join the ores of Lincolnshire, to which they are in every way similar. In some parts of the county of Northampton within a very few years the roads were mended and walls built with ironstone, and the Mining Journal was the first and only paper that drew public attention to the vast mineral resources that were lying waste over a large area of ground, a fact that has been fully acknowledged by the leading ironmasters, and also in a recent history of Northamptonshire. The increase in the production of the county was more rapid than in any other part of the kingdom, for in six years the output had gone up from 476,981 tons to 1,004,093 tons. Yet, as we have before stated, our knowledge as to the entire area of this important ironstone field is almost nil, all we know being the different localities where the stone is now being worked, and that it is extensively used in the furnaces in Derbyshire and South Wales in addition to the home ones. The next iron district in size is Lincolnshire, which in the northern part commences at Frodingham, and goes on to Brigg, ore being raised at Claxby, close to Lincoln, but little, indeed, is known as to where the boundaries are that divide the ironstone from other strata, and here there is also plenty of room for profitable investigation. In Cornwall and Devonshire there are good hematite and spathose ores, but the output is but trifling, not half even of what it was a few years ago.

In Ireland there are beds of ironstone of good quality, but they are not worked to anything like the extent they ought to be. In the northern group of coal fields, in Leitrim, the clay ironstones occur both amongst the shales of the coal measure and amongst those of the Yoredale beds, and are very valuable from the quantity and richness of the iron. They were formerly smelted at the Arigna Ironworks on the shores of Lough Allen, and gave on an average 51.36 per cent. of protoxide of iron, 1.59 lime, and 1.92 magnesia. In the Antrim coal series the strata appear to be nearly identical with those of the Ayrshire and Lanarkshire coal fields, there being beds of the blackband limestone, which has been extensively raised and calcined on the spot and exported to the furnaces on the opposite coast of Ayrshire.

Without entering into further details, we think we have shown what a very imperfect knowledge exists as to the mineral resources of the country so far as iron ore is concerned, and how important it is in the public interest that our information with respect to it should be something on a par with what we know of our stores of coal through the labours of the eminent geologists and mining engineers whose calculations we noticed in the early part of this article. The work we do not believe would be so arduous as that was, and then we should know how we were situated with respect to the two most important industries of the kingdom.

STRIKES, AND FOREIGN COMPETITION.

Although in several of the most important iron and coal producing districts there are not wanting signs of a gradual revival of the staple industries of the country, it is to the true interests of all classes that we should occasionally review our position, and endeavour if possible to ascertain our future prospects. And in doing so we repudiate any desire to take a gloomy or pessimist view. We have ever spoken cheerfully and hopefully of our country in a manufacturing and commercial point of view; we have the firmest faith in the stability and excellence of our workmanship, and the energy, perseverance, and wealth of our merchants and capitalists, and believe that side by side with any foreign competition English goods and manufactures will bear favourable comparison. But it is in this fancied strength of our position in which lies our weakness. Our hitherto superior position as a producing and manufacturing nation leads our working classes generally to view with indifference the rapid growth and development of those manufactures and industries in other countries who now keenly compete with us in the world's supply. Our working classes ignore the skill, ingenuity, and praiseworthy thrift of our Continental and American rivals in trade and manufacture, and view with the most stolid indifference many things which their best interests should lead them to calmly consider and reflect upon, and thus improve and remedy.

But it can scarcely be expected that our working classes will lay these things to heart so long as they are led by those who, however good their intentions, are ignorant of the matters upon which they treat, or wilfully perverse in the action they follow. Mr. MACDONALD, M.P., in his recent address to the miners of Hanley on the subject of Trades Unions, made several sensible and pertinent observations to which no one could justly take exception; but he made other remarks with which we altogether differ, knowing them to be contrary to fact and most inimical to the true interests of the country. Mr. MACDONALD is justified in attributing much of the present improved condition of the collier and of the working classes generally to Trades Unions or combinations, but even here the growth of education and justice as between man and man have materially contributed to bettering the condition of our colliers and mechanics. But when Mr. MACDONALD denounced "the fear of foreign competition as simply a bug-bear invented by greedy employers to help them to grind down their workpeople," then we at once join issue with him, and unhesitatingly say that he either ignorantly or wilfully perverts facts which should be patent to all, more especially to those who attempt to lead others. We are seriously afraid that Mr. MACDONALD purchases popularity with the working classes at the expense of responsibility. It is unfortunately too easy to obtain applause in a crowded meeting of uneducated colliers at the expense of the employers, but we envy not the popularity so earned, or the plaudits of such a populace. Why will Mr. MACDONALD ignore official facts and figures, convincing to other minds, and repudiate evidence of an overwhelming character?

Is it not a fact that England to-day is driven out of the markets of which she a few years ago possessed an almost complete monopoly? Is not Germany, and France, and America keenly competing with us in our iron and steel works, our iron hardware, and many of our staple productions? No matter what the cause, the fact remains patent to all who are not persistently blind or wilfully ignorant. Strikes, and the suicidal policy of the leaders of Trades Unions, in insisting upon ever increasing wages, have produced in this country a state of things which it is unwise and impolitic to attempt to ignore or under-estimate. The demand for high wages, and the refusal of the working classes to abate one jot or tittle of their fancied rights and privileges, have given immense advantages to the mechanics and artisans of other countries, which they have not been slow to avail themselves of, and foreign workmen now stand shoulder to shoulder with our best English mechanic and artisan in the production of articles in which we once held supreme sway, and our merchants find it increasingly difficult to place English goods in foreign markets where only a few years since they were appreciated and sought after. Mr. MACDONALD's assertion that it is "utterly impossible for America to touch us in the markets of the world," simply stands for nothing in the face of stern facts and realities. Manufacturers and merchants know too well by painful experience that the United States are rapidly superseding us, not only in foreign markets, but in many of our own colonies, more especially in Australia and Canada. We say these facts are known, or should be known, by Mr. MACDONALD, as a

leader of the working classes, and he has a heavy and serious responsibility resting upon him in withholding these truths, and nullifying our mechanics and artisans into a state of false security. A successful diagnosis of disease is the surest way to a remedy. Our staple trades are depressed and prostrate to an extent never before experienced in the commercial history of the present generation. Let us have a clear perception of the reason and we may hope for revival, although not, perhaps, complete recovery. We say advisedly that strikes are at the bottom of our present trade depression and commercial stagnation; and we also say, notwithstanding the assertion of Mr. MACDONALD, that England, as a manufacturing nation, cannot afford to treat foreign competition as a "bugbear." Strikes must in future be discontinued, and our working classes must treat as stern facts and realities the severe competition of other nations in our manufactures and arts, and when all shall have learnt to disregard the voice of the charmer in the shape of the counsels of the Trade Unionists, and realise our true position as having determined rivals with whom to contend, then, and then only, may we expect to find our trade and commerce once more firmly re-established.

IMPROVEMENTS IN THE WORKING OF COAL.

The frequent accidents that take place in our collieries from the use of gunpowder have led to its entire discontinuance in many districts where the mines are known to be fiery, and to the adoption of various methods for taking its place. Some of these have been successful, whilst others have not been persevered with. By the ordinary method of getting the seam is undercut by the miner, and by one system it either falls by its own weight, or is forced down by the superincumbent strata above it. By another method the holing is made above the coal, and is blown down with powder, two or three holes being drilled, and the cartridges with fuses properly rammed in and ignited the coal is brought down. But in many collieries where inflammable gas prevails is an element of danger, so that the coal in those cases where powder is not used is caused to fall by means of wedges driven in by hand with hammers. This is a tedious and expensive process, and to the disadvantage of the workman and also the employer. In some districts, such as most of those in South Wales where the steam coal was so friable that after being cut and left standing idle for 12 or 16 hours it came down by the pressure of the roof. But in mines where the coal requires considerable force to fall to the bottom, and where gunpowder is considered dangerous, means have been brought forward by which all that is required can be accomplished by hydraulic machinery.

One of the first that introduced this system was Mr. JONES, of Blaenau, and it has been in operation at several places, but was at first intended to be worked in connection with a coal-cutting machine; it is simplicity itself. After a head was cut in each side, and nicked vertically in the middle, a bore-hole was made. Into the bore-hole was fitted a disc of iron fitted with a cup leather, forming a hydraulic ram. To the hollow disc or cylinder a pipe was attached, serving as a handle, so as to insert it into the nicks, whilst the handle was continued by means of a flexible pipe to a fore-pump, drawing its water from an air-tight reservoir, and worked by one man. By the action of the hydraulic ram the coal was broken from the solid, the air-tight reservoir serving to draw the water back from the ram cylinder on the completion of the stroke, and so pulling the ram into its place, enabling the same water to be used over again.

Mr. CHUBB, of London, also brought out a similar machine, as did also Mr. BIDDER. These machines, instead of being inserted into a nick, are made to go into an ordinary hole. By means of a hydraulic press a wedge is driven between two blocks of steel with a lateral movement only, by means of tension bars connecting them with the press. There is another system, in addition to the wedge machine, by the same party. Rams are introduced, and holes are made for cylinders in connection with them, with a lid bar of steel. At one end of the bar is screwed a tube $2\frac{1}{2}$ in. in diameter and 17 in. long, on to the end of which was fixed one of TANGY'S fore-pumps. The water from the pump was carried through a copper tube with a small bore, and is screwed into the bar carrying the rams, which are on both sides of the bar. By working the pump the rams on either side are forced out from the bar. By means of the pump one man could apply a pressure equal to about 10 tons on the square inch.

Mr. BIDDER'S system is a very good one, the arrangement of the wedges being such that any desired degree of expansion can be obtained. Instead of forcing one solid wedge between the pressing block, two wedges laid side by side are forced in, and if more expansion is desired the ram can be drawn back, the mass removed, and the point of another wedge inserted between the heads of the split wedge, the press then re-attached, and a second wedge forced in, and the operation can be repeated as often as necessary. The machine of Mr. BIDDER has been extensively used in Staffordshire and Lancashire, and, no doubt, will be more so, seeing that both men and masters are in favour of not using powder in mines where a good deal of gas is given off.

Mr. C. BARTHOLOMEW, one of the proprietors of the Wombell Main Colliery, and of the Swaithe and Edmund Main Collieries, near Barnsley, is another patentee for improvements in the working of coal by means of a hydraulic press or screw jack. The system can be applied either with or without undercutting the bottom or cutting the sides. One mode by which the coal can be broken is by drilling a hole into the face of the coal, which is enlarged by means of a bar or rod with a cutter pointed to its end. The back of the cutter is made so that when it touches or is pushed against the end of the hole the cutter crosses or is forced out sideways, and the bar being pushed firmly in and turned round the end of the hole is enlarged. The hole being ready a tube is inserted with a small ring, which fills, or nearly so, the diameter of the hole. The space between the tube and the side being rammed firmly in with damp coal dust and made as solid as possible. The pipe is then connected with the pump of a hydraulic press, or with pipes supplied with water from the pit top, when the force is brought to bear on the coal; the requisite force to bring down the coal of course depending upon the compactness of the coal, its being more or less full of gas or water, or whether it has been disturbed or not by the superincumbent pressure of the ground.

The latest addition to the various systems introduced for the purpose of breaking coal *in situ* is that just brought out by Mr. JOSEPH MITCHELL, Worsbrough-tale, near Barnsley, who is interested in the Edmunds and Swaithe Collieries, as well as in the Mitchell Main. In the two former there was a lengthy strike on the part of the men with respect to the prices paid for getting coal without the use of powder, for after the explosion at Swaithe the men and their employers agreed to give up gunpowder altogether. Consequently the wedging had to be done by hand, a very slow process indeed. Since then Mr. MITCHELL has paid a good deal of attention to the subject, and being both a mining and a mechanical engineer of long experience, he has had a great advantage over most of those who have preceded him in the same direction. The result is that he has invented a mode which gives every promise of the most complete success. The invention consists of an expanding plug of a cylindrical form worked by means of hydraulic pressure. The plug is composed of two halves, with a little wedged shaped space between them, and are jointed at the end to the extremity of a hydraulic cylinder, and receive between them a wedge-shaped extension of the hydraulic ram or plunger, fitting exactly the widest part of the wedge-shaped space, and extending about half its length when the ram is withdrawn into the hydraulic cylinder. When the pressure is applied to the ram the wedge-like extension is driven further along the space between the two halves of the plug which are forced apart, so that the plug is expanded in one direction beyond its original diameter. As usual the coal is undercut in the ordinary way, when a hole is drilled in the face of it corresponding to the size of the plug in its contracted form into which is inserted the plug, so that the expanding force will be exerted in a vertical direction, and the hydraulic power being applied the wedge-shaped extension of the ram is driven between the parts of the plug, thereby expanding the latter with great force until the mass of coal beneath

is brought down. A number of these expanding plugs may be simultaneously applied if necessary, or the same plug may be introduced in the ordinary way by an accumulator, or by some other source of power in connection with the hydraulic cylinder, or the source of power may be generated within the cylinder itself by the evolution of gases produced by the chemical combination of a suitable mixture placed within the liquid, and by it transmitted to the ram. By being exerted on the men having plenty of time to retire to a safe distance before the fall of coal takes place, which is not always the case by ordinary wedging, for it is from such falls that so many fatal accidents take place.

Hydraulic power there is no doubt is not only the most economical mode of bringing down the coal when it is undercut, but it is the safest as well. Not only so, but it also brings it down in much larger pieces than powder or hand wedging, so adding to its marketable value—a matter of great importance to the colliery-owner and the collier as well. As we have before stated, the doing away with powder in many mines is going on, and will continue to do so, and in its place we certainly cannot see any better substitute than the hydraulic power in connection with wedges and plugs, to which we have drawn attention.

EXPERIENCES OF AN IRON "LIMITED."

The experience acquired from year to year by the Rhymney Iron Company (Limited) continues to be of the most dismal character. More capital has been put into the concern, the manufacture of steel has been proposed, and every effort has been made to improve the situation, but all to no purpose, as the shareholders still go dividendless. The company has certainly still a good balance at the credit of its profit and loss account, but in the last financial year its operations were attended with a loss of 4733*l*. In December, 1876, the directors issued a circular, in which they expressed their opinion that, although the condition of trade was very unfavourable, the company would pass through the year without loss; but in consequence of a seriously protracted opposition on the part of a section of the colliers to a fair adjustment of wages, and of the prejudicial influence of the war upon the demand for railway iron, their expectations have not been realised. The production of iron by the company last year amounted to 47,700 tons, against 30,404 tons in the preceding nine months; there was thus some return last year to the full output of the mills, but the quantity of iron made in 1876-77 still fell somewhat short of the quantity required for the most economical working. In regard to coal, no alteration in the demand has warranted the resumption of the full working of the company's collieries, and the directors still adhere to the opinion that it is to the true interest of the company to restrict the output that it is to be as far as practicable. The application of mechanical haulage has been completed in the principal pit, and screens have been erected as a substitute for the division of the coal by hand labour; the new process is stated to be working satisfactorily. The anticipations entertained by the directors of an increased supply of Spanish iron ore at reduced prices have also been realised. All this is encouraging as far as it goes; but, on the other hand, the condition of the iron trade has been adverse, and the supply of orders has been irregular, the price falling from 6*l*. per ton in March, 1876, to as low as 5*l*. 5*s*. per ton, rallying for a time to 5*l*. 15*s*. per ton, and then exhibiting a second relapse. Taking all the circumstances into account, no previous period has exhibited so unfavourable a contrast between the cost and the sale price, and its effect has been illustrated by a suspension of operations in several important ironworks in the country. Debentures to the amount of 70,000*l*. have been fully subscribed for, the amount having been taken up without any appeal to the public. The Bessemer steelworks, for which this new capital was principally raised, have made fair progress, although they have been retarded by an unusually wet season.

The great drawbacks against which the Rhymney Iron Company (Limited) has had to contend have been—first, the loss of the American demand for our railway iron; and, secondly—and probably by consequence—the sadly low rates current for iron. The directors of the Rhymney Iron Company (Limited) assure the proprietors that they are giving their earnest attention to economy in carrying on the company's works; but the effect of this assurance is, unfortunately, almost entirely neutralised by the intimation which the directors have in the next breath to make—that there are at present no indications of any improvement in the demand either for iron or steel. The iron trade has been run down in the United States—as we have shown on more than one previous occasion—to terribly low prices; and until some rally takes place on the other side of the Atlantic we cannot hope for any very material improvement in the British iron markets. All this is trying enough, but during the last three years the Rhymney Iron Company (Limited) has had, like its neighbours, to face the still graver difficulties of disorganised labour markets and chaotic quotations for raw materials.

LOCOMOTIVES IN COLLIERIES.—A telegram to the Times from Philadelphia (July 12) says—"In a coal mine near Sharon, in North-Western Pennsylvania, where the coal is brought out by locomotive power, anthracite was being burnt in the engine on Wednesday, and the result was that the air passages of the mine became filled with gas while 34 persons were at work in it. Rescuing parties were as soon as possible sent in, and they succeeded in bringing out all the victims, but seven were already dead and others injured."

THE PRUSSIAN IRON AND STEEL INDUSTRIES.—The Berlin Statistical Bureau has completed its labours on the Prussian industrial census of Dec. 1, 1875. The National Zeitung quotes the figures relating to the iron and steel trades as of special interest in connection with the existing agitation for the protection of these trades. The total number of establishments for getting the ore, smelting, and steel making is 1678, of which 1073 have a personnel numbering upwards of five, and 605 a staff of less than five. The industries give employment in all to 114,000 persons. The number of persons engaged in working the iron and steel is 215,000, distributed amongst 91,000 establishments, of which 88,500 employ less than five persons and 2445 more than five. The quoted journal remarks that the importance and comprehensiveness of this account of Prussian industry ought not to be depreciated, and adds that the protectionists who are crying out for a special commission of enquiry will perhaps be interested to learn that the industrial census of Prussia alone has cost 180,000 marks (9000*l*.), in addition to the salaries of the regular employees of the Statistical Bureau.

GOLD IN AUSTRALIA.—South Australian papers announce news of an encouraging character received from the Northern Territory gold fields. The reefs are rapidly improving, and the deeper the mines are sunk the richer they become. Some coolies working on tribute are making 25*l*. per man per week.

COAL AND IRON IN THE UNITED STATES.—There has been no change in the price of steel rails at Philadelphia, and the market may be stated to be quiet and steady. Sales have been made of about 5000 tons at medium figures during the last few days. Prices have ruled at \$16 to \$18 per ton currency at the mills. There have been several enquiries for steel rails at Philadelphia, one being from a foreign buyer, and it is possible that some important orders will be placed during the next month. There are several buyers of iron rails in the market at Philadelphia, and it seems probable that an increased business will be developed in the course of a few weeks; sales have been made on account of a Cuban line. There has been a moderate demand for plate and tank iron at Philadelphia, but scarcely any large orders have been placed. There has been a rather more active demand for old rails in Pennsylvania lately. The Pennsylvania pig-iron trade has remained without any signs of improvement. In the Pittsburgh district the manufactured iron trade has continued dull, with little prospect of any improvement. The coal and coke trades of Pennsylvania have also been dull. The aggregate production of anthracite and bituminous coal in Pennsylvania to June 16 this year amounted to 10,916,448 tons, against

8,504,059 tons in the corresponding period of 1876, showing an increase of 2,412,384 tons this year. The aggregate movement of coal and coke over the Pennsylvania Railroad to June 7 this year amounted to 3,062,548 tons, of which 1,672,652 tons were coal. The Little Rock and Fort Smith Railway Company contemplates the working of coal at various points along its line.

REPORT FROM CORNWALL.

July 12.—These are dull times indeed, and but for the West Basset business there would be very little to talk about. This still remains the chief topic of conversation in mining circles, so that it has been something more than a nine-days wonder. The alarm which was felt with regard to the position of other mines, which was somewhat freely canvassed, has subsided, and probably the lesson will do some good. The comments that have been made adversely to the declaration of a dividend at Dolcoath seem to us to be idle. The profit was made in the three months' working, and there is no reason whatever why it should not be divided. But some people do lose their heads terribly over mining business.

It remains to be seen what effect the unfortunate death of Mr. Greene will have on the fortunes of Penrith. There is very little doubt that this is a good mine, but whether it is not over-weighted with capital is another matter. This is, probably, the most promising of Mr. Greene's recent ventures.

There has been a strike at Levant. It did not last long, the miners wisely coming to the conclusion that it was better to submit to a reduction in the rate of wages than to be thrown out of employ. If mines are to be kept afloat now-a-days—rare in very exceptional instances—their expenses must be reduced to a minimum, and wages, to a certain extent, must share in the general economy. The managers at Levant seem to have acted with every consideration.

A well-known figure in mining circles has passed away—Mr. Hugh Sims, so many years clerk and cashier to the Messrs. Williams, of Scourie, aged 77 years. He was as much respected as he was widely known.

The rock drill competition will be a sharp one. The Barrow people are by no means inclined to let the Diamonds have it all their own way, and so we are told that proportionably the Barrow drives faster than the Diamond. It is, however, early days yet to compare notes. The chief point in which mining men are interested at present is this—that further proof has been afforded of the applicability of mechanical boring to Cornish mines. It has been shown that the Barrow works efficiently and economically at Dolcoath; it is being shown that the Diamond Company's drill will work efficiently and economically at Carn Brea. So here are two strings to the mining bow.

The great adit is not an unmixed blessing. During the heavy rains of last year the dam that confined and carried away in a separate channel the mud and other waters brought by the adit to Carnon broke just above Devoran, when some thousands of tons of sand were thrown into the river, which had done great injury to the navigation. Vessels that formerly came to the quay to discharge have now to be lightened some 40 or 50 tons at Restronguet, and vessels that took away formerly from 130 to 150 tons of copper ore have now to go away with only 80 or 90 tons, owing to the silting up of the river. Others have to seek cargoes elsewhere, and go away in ballast, there being nothing in the place to ship, in consequence of the falling off in the trade of the neighbourhood. A great alteration has taken place at Devoran during the past 12 or 13 years. Then there were more shipping transactions done in one month than now in twelve. Formerly upwards of 20 vessels were to be seen at the quay at once, and three or four steamships regularly called once or twice a week throughout the year. Now they have sought trade elsewhere, partly owing to the state of the river, and partly to the depressed state of things in the mining districts. The quantity of debris that has been brought down into some of our valleys from clayworks and mines is enormous.

The Duchy is a grand obstructive. Perhaps it will interfere with the improvement of the river at Devoran. It actually has with the dredging operations in Falmouth Harbour, for at a special meeting of the commissioners a letter was read from the Duchy authorities which stated that observing from the newspaper reports that dredging had for some time past been going on in Falmouth Harbour, of which they were unaware, and that the omission to ask the consent of the Duchy for permission to proceed with the works appeared to have been designed, the matter had been brought under the notice of the Council of the Prince of Wales, and that the harbour commissioners would not be allowed to continue their operations until they obtained permission from the Duchy. It was alleged that dredging had been carried on off Kila's Quay nearly 40 years since in Falmouth Harbour, and after some discussion it was resolved that until the commissioners are assured they were legally liable to ask the Duchy's consent, they decline to do so. Well done Falmouth! Now the Duchy asks for a rent of 1*s*. a year as an acknowledgment.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

July 12.—This week has seen the closing of one memorable trade quarter and the opening of another. The last has been one of little business and less profit; what the new quarter will be the quarter itself will alone declare. That it will be a time of unalloyed prosperity war and unsettled relations between employers and employed make unlikely. Knowing that the colliers have to be settled with before the current quarter is out buyers of coal and of iron already evince a disposition to operate with much caution. What, however, the preliminary negotiations which are about to take place touching the future scale of wages will evolve is wholly doubtful. At present the miners' representatives give no sign of any preparedness to meet masters' views in respect of lengthened hours. Consequently trade is getting but little relief from that quarter, though the distress amongst the colliers' families is very severe; in truth is without precedent in summer.

The Quarterly Meetings yesterday in Wolverhampton and to-day in Birmingham have passed off very quietly. More was, however, done in several commodities than some salesmen had expected, and yet more would certainly have been recorded if lower prices had been taken, but the circumstances of the trade wholly precluded any declared reduction upon the standard quotations which have now for some time prevailed for best finished iron. Among the novelties exhibited were models of the Universal iron colliery wagon, shown by Messrs. Johnson, Cookson, and Co., of Dudley; diagrams of Whitwell's patent fire-brick hot-blast stove; working specimens of Pumphrey's patent fiftyfold writer, and of the magnetic pen. The advantages claimed for the new colliery wagon are lightness, simplicity of construction, saving of labour in greasing, saving of grease, perfect lubrication, easy running, and cheapness.

The pig market was taken greatly by surprise this afternoon by the Lilleshall Company announcing that they should take 10*s*. off cold-blast and 5*s*. off hot-blast pigs, making cold-blast 5*l*. and hot-blast 4*l*. 10*s*. Staffordshire all-mine was subsequently dropped 5*s*. making them 4*l*.; marked bars were declared unaltered, but Monmore marked iron was dropped 10*s*. Some other firms must follow.

Ironmasters are now looking for some slight relief in the matter of mill and forgers' wages, even as they with the coalmasters look for the adoption of a new scale of miners' wages which shall help to bring down the price of coal and of most descriptions of pig-iron. Until this relief is experienced the bulk of the makers of finished iron over their inability to accept the prices at which some buyers declare they can alone place orders. This leads to the extent of new business doing this week being very small as well as the blast-furnaces as at the mills and forges. Still as to both orders have been booked for delivery throughout the quarter at the rates now current. It would, however, be inaccurate to state that these represent a total equal to the average at this season.

Mining and ironworks property keeps at a discount. Shares are increasingly difficult to sell even at weakening quotations, and when, likewise, there can be no doubt of the property ultimately yielding, in respect of coal mines, vast stores of high-class fuel. The recent addition to the capital of the Sandwell Park Company has had the anticipated effect upon the shares of that company, and they are

now easy to get in varied parcels. For the old 10*l*. shares there are buyers at 16*l*. and sellers at 18*l*., for the new there have been sales at 2 premium, while "fraction thirds" of the new shares stand at 1 premium buyers, and 1 premium sellers. The Pelsall Coal and Iron shares stand at 11½ dis. buyers and 10½ dis. sellers for the 20*l*. shares (15*l*. paid). There are offers of 3*l*. 10*s*. for the 10*l*. Chillingham Iron Company's shares, but no sellers at that figure, and the 10*l*. (8*l*. 10*s*. paid) shares of the Spon Lane Colliery are offered in vain at 6 dis.

The previous quiet demand for coal in North Staffordshire has not been made less so by the diminished enquiry, consequent upon the local holidays, for the requirements of the ironworks have not been increased. Under these circumstances there is a tendency to weakness in the coal quotations in North Staffordshire. Pottery mine is selling only slowly, there being a marked falling off in the business only recently and for some time before doing with South Staffordshire. The finished ironworks can be kept in only partial employment. Plates are difficult to sell at a paying rate, so considerable is the competition from Cleveland; the same has to be said of bars, though in these a fair business is here and there being done via Liverpool; and in strips and hoops the competition of Warrington is much felt. There has scarcely ever been so quiet a quarterly meeting as that which was held on Thursday last week. Hardly anything was done, and it was by general consent that transactions were deferred till after to-day's meeting in Birmingham.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

July 12.—Very little change has taken place in the state of the iron and coal trades since my last, both being still quiet. The same is also the case with respect to lead-mining, the production of ore being little more than one half of what it was a few years since. At the works engaged in the smelting of ironstone there is about the same production of pig, for which a large quantity of ore is still imported from Northamptonshire. In manufactured iron a steady business continues to be done, and the same may be said with respect to Bessemer rails at the one establishment of which the county can boast. The collieries have not been fully employed for some time, except in a few instances; and this state of things is not likely to be materially altered, seeing that the demand for household qualities is likely to decrease more than otherwise. This is more especially the case with respect to the trade with the Metropolis, which has fallen off considerably of late. There are still a good many miners out on strike an Unstone and other places against proposed changes in the price paid for getting. It is, however, probable that a general reduction of wages will take place should the price of coal fall lower than what it now is. On Monday last there was a meeting in Sheffield of the Associated Coal-owners, when the question was discussed, when it was agreed that it was not at present desirable to disturb the existing relations between the masters and men.

One or two branches of the Sheffield Trade has slightly improved during the week, but the general tone is far from healthy. The colonies continue to be amongst our best customers, whilst some fair orders are in hand for rails and railway material. Several of our manufacturers are exhibitors at the agricultural show at Liverpool. Amongst them is the well-known firm of Crowley and Son, the largest producers of malleable iron there are in the kingdom, and whose fine castings, either plain or ornamental, have a world-wide reputation, equalling in sharpness, finish, and elaboration anything that can be produced in copper or steel. Their exhibits consist in chaff-cutters and lawn-mowers, neither of which for cheapness, simplicity, and easy working can be equalled, let alone surpassed. Messrs. Newton, Chambers, and Co., of the Thorncliffe Works, also show fine specimens of kitchen ranges, for which the firm is noted.

The Coal Trade of South Yorkshire is still quiet so far as regards household sorts, but there is a reasonable demand for steam qualities for shipment from the Humber ports. The wages question in the district is by no means satisfactory, and it is said that to-day a notice was posted at the Dodworth Silstone Company's pits stating that the whole of the men would receive the usual 14 days' notice to leave. Seeing that many of the men are now on strike it is evident that it is intended that there shall be a general reduction in the wages paid to all the hands.

REPORT FROM THE NORTH OF ENGLAND.

July 12.—The usual third quarterly meeting of the iron and allied trades of the North of England was held at Middlesbrough on Tuesday. There was not much business done, however, owing to the singularly depressed state in which the pig-iron department of the staple industry has been for some time past. Buyers of pig-iron are disinclined to enter into business, and stand out for even lower quotations than those now current, although these are about as low as anything that has been known in the history of the trade. Business, therefore, was done at even lower quotations than those recently current, No. 3 being quoted at 41*s*., and No. 4 for 39*s*. 6d. per ton net. In some cases the merchants in Cleveland have expressed themselves as greatly dissatisfied with the new rule introduced by makers, which compels all iron to be paid for on delivery, instead of at the end of the month or by bill, as previously. There is not, however, the least reason to doubt that this arrangement will, in the long run, tend to the greater stability of the trade, and prevent some of those disastrous and unexpected losses that have recently been so common throughout the Cleveland district. Prices are kept down by the exceptional largeness of the stocks in the hands of pig-iron makers. At the end of the month these stocks represented 225,613 tons of iron, in addition to which over 20,000 tons were at the same time in warrant stores. It is, of course, impossible to foresee how this state of things may continue to affect the trade. The probability, however, and the view entertained by the most experienced men is that, now the present year has so far advanced, there will be no radical change of affairs, at least, before next spring, when, if war in Europe should have terminated, a steady and permanent revival may follow upon the opening out of the ordinary spring navigation.

The usual exhibition of objects of interest to the trade was held on Tuesday, at Middlesbrough, in connection with the quarterly meeting. There was, however, very little disposition evinced to take advantage of the opportunity thus afforded for bringing under the notice of all classes of the industrial community "things new and old;" and, considering the limited degree of encouragement usually vouchsafed to exhibitors by those for whom they exhibit, the indifference referred to is, perhaps, not altogether a matter of surprise. An exception to the general rule was, however, afforded by Messrs. Bolckow, Vaughan, and Co., who showed some samples of steel made from Cleveland iron at their new Eston Works. These samples had been produced by running the molten iron direct from the blast-furnaces to the Bessemer converter, without the intermediate cupola process, as is done at the Barrow Hematite Iron-works, the Ebbw Vale Works, and elsewhere. The fracture was very good, and the steel showed to analysis 20 per cent. of carbon, 86 per cent. of manganese, 07 per cent. of silicon, and 1.77 per cent. of phosphorus. There cannot be a doubt that if the phosphorus could have been further reduced the quality of the metal would have been much better. Phosphorus, however, is extremely difficult to eliminate, and it is greatly to be feared that until some new and more effectual process for reducing its proportion is found the steel made from Cleveland iron will not be of sufficient value to bring it into general use as a marketable commodity. Messrs. Bolckow and Vaughan have now, however, attempted to solve the problem; and in the interests of the Cleveland district it is to be hoped that their efforts will be successful.

Another interesting exhibit, and one that may be regarded as marking a new era in the metallurgy of the Cleveland district, was that of specimens of charcoal iron of very high quality, made by the direct process, with which the name of Dr. Siemens is associated, from Cleveland ores. The iron was shown by the Tow-ester Company (Limited), and it was generally allowed to prove that iron of the best quality from the coarse and silicious ores of Cleveland is a possible thing. This, of course, is a matter apart from

the cost of the manufacture. On this head very little information is yet available, but the Towcester Company maintain that the cost of producing such iron from Cleveland is so low as to enable the iron to be successfully introduced into the market. We shall, probably, hear more of this matter. Meantime, it is interesting to find that practical men are persevering with costly and laborious experiments calculated and intended to lead to new economies in the wide field of practical metallurgy.

The standing committee of the board of arbitration and conciliation in the North of England Iron Trade will meet at Darlington to-morrow, for the purpose of arranging the preliminaries for the forthcoming arbitration as to the 10 per cent. reduction of wages sought for by the employers. It is intended that the arbitration court shall sit at Darlington, on the Monday following. Mr. David Dale has accepted the office of sole arbitrator, with the approval of both sides. Mr. Dale acted for five years as Chairman of the board, and has acquired in that capacity a very considerable knowledge of the usages and principles of arbitration. He is now about to act at a critical time, but he has a remarkable insight into the requirements of the trade, and in his hands there is little need to fear for the future of the board, the disruption of which has been threatened by the present claim of the employers.

Messrs. Bolckow, Vaughan, and Company have undertaken the manufacture of spiegeleisen at their Middlesborough works, the product of the ores which they import from their own hematite iron mines at Bilbao, in Spain. Samples of this spiegeleisen just analysed by Messrs. Pattinson and Stead, of Middlesborough, show 21.038 per cent. of manganese, 0.442 per cent. of silicon, and 0.122 per cent. of phosphorus. It will thus be seen that the quality of the product is very good, and its cheapness is a matter of considerable moment to the steel trade on the banks of the Tees.

Sir James Fitzjames Stephen, Q.C., has issued his award relative to the reduction of 6 per cent. claimed by the Durham collieries from the wages of the cokemen in their employment. Sir James finds that there are no special circumstances distinguishing cokemen from the other surface labour by whom a reduction of 6 per cent. was recently accepted, and he, therefore, awards the full amount of the reduction claimed. The reduction will come into effect from the date of the award. The whole of the men employed both above and underground in connection with the Durham collieries have now suffered a reduction of wages varying from 5 to 7½ per cent. It is not expected that there will be any disturbance of the rate of wages now established for a long time to come. Practically it may be said that the normal wage-rate of 1871 has now been re-established throughout the whole of the county, and in some cases wages are now taking an even lower range than these.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

July 12.—Although the Iron Trade shows no improvement so far as prices are concerned, it is manifest that there is more business doing at the local works. The figures given below will go to prove that fact. No further notices to terminate contracts have been given since last report, but it is feared that a general reduction in wages is contemplated. Low wages certainly are now, but the men have themselves to blame to a certain extent, as their conduct in opposing the just demands of employers in times gone by helped to drive trade from the district. The clearances made during the week have been to the Baltic ports, Italy, and Egypt. A slight revival is apparent in the foreign demand for bars. A large parcel has been forwarded to Sweden, and smaller ones to Portugal. The Tin-Plate Trade is unaltered. Owing to the death of one of the partners the Caldicot Iron and Wire Works are announced for sale by public auction. The works are about a dozen miles from Newport. Very little alteration has taken place in the Coal Trade, but the relations between masters and men appear to be becoming settled on a more satisfactory basis. The Ogmore Valley and the Maesteg men have resolved to resume work at the 10 per cent. reduction until the end of the present month, when the old rate of wages will be given. The Bwlfa colliers have also decided to recommence work, an arrangement of a satisfactory nature having been made. The strike of surface men at Mountain Ash is also at an end. The Aberdare and Plymouth colliers are still resolved upon leaving work at the end of the present month, and their fellow-workmen are equally determined upon supporting them in the coming struggle against the 10 per cent. reduction. Although the collieries, generally speaking, have been fairly well employed, during the week business has been characterised by dullness. Clearances have to a slight extent fallen off. For steam coal there is still a tolerably good demand, but house qualities are quiet; pit-coal is also dull.

During the month of June last Cardiff shipped 363,257 tons of coal foreign, against 365,884 tons in the corresponding month of last year; Newport, 59,164 tons, against 52,207 tons; Swansea, 59,867 tons, against 57,136 tons; and Llanelly, 4640 tons, against 9696 tons. Coastwise shipments were: Cardiff, 72,033 tons, compared with 76,027 tons; Newport, 71,515 tons, compared with 62,130 tons; Swansea, 23,211 tons, compared with 19,611 tons; and Llanelly, 11,265 tons, compared with 9753 tons. The quantity of patent fuel shipped last month was 10,296 tons from Cardiff, against 3142 tons in the same month of last year; Swansea, 11,344 tons, against 19,628 tons. The iron cleared was as follows: Cardiff, 16,049 tons, compared with 6092 tons; Newport, 17,468 tons, compared with 11,947 tons; Swansea, 252 tons, compared with 404 tons. The following principal clearances made will show the direction of the trade: Cardiff, 1100 tons rail; Caliz, 1343 tons; Gothenburg, 4094 tons; Genoa, 870 tons; Lisbon, 330 tons; Malra, 3554 tons; Montreal, 3786 tons; Norrköping, 1134 tons; Quebec, 1048 tons; Rio Janeiro, 1210 tons; St. John's, 847 tons; Uddewalla, 1510 tons; Wallaroo, 700 tons; Bahia, 1868 tons; Kurrachee, 2100 tons; Palermo, 635 tons; Golehar, 2540 tons; Wisberg, 678 tons rails.

In the House of Lords the case of Morgan v. Elford and Another, has been decided. The defendants were charged with conspiracy and fraud with regard to the sale and purchase of the Gwaun Cae Gurwen Colliery, Swansea. In giving judgment Lord O'Hagan remarked that the Bill was stuffed with allegations involving, if they be not true, the most unwarrantable slanders against the defendants, and he was bound to say, agreeing in that respect unreservedly with the Court of Appeal, that those scandalous allegations had been left unproved, or had been disproved absolutely. The Bill was dismissed with costs.

At the Lord in Bankruptcy Court an interim injunction has been granted restraining Mr. Williams, a large creditor at Birmingham, from levying a distress on the Bury Port Smelting Works. The company owning the works, which are situated in Carmarthen, have liquidated, and the works were mortgaged to Mr. Williams. The Registrar made the order prayed for until the application to disclaim comes on.

The fireman of the Weig Fach Colliery, named Rees, was summoned before the Swansea magistrates on Saturday, for that, knowing the mine was dangerous by reason of the prevalence of gas, he did not, being the competent person appointed under the Act, inspect the mine with a locked safety-lamp, and did not make a true report of the condition of the mine, and that the workmen were allowed to work there. There was another charge against the defendant of not inspecting the mine and railways known as No. 20 tophole with a lamp before the time the colliers commenced work. The defendant, on the advice of his solicitor (Mr. Robinson Smith), pleaded guilty, and he was ordered to pay a fine of £2, and costs, or one month's imprisonment, in each case.

The manner in which the Lord Mayor and Welsh Miners' Fund Committee have distributed the fund at their disposal will certainly give general satisfaction, especially the recognition of the services rendered by Mr. T. E. Wales, the Government Inspector, Dr. H. N. Davies, and the medical men, engineers, and colliery agents who lent their aid; and the allotting of lump sums to the widows, rescued miners, and rescuers will be much more highly appreciated than any arrangement for giving them a small weekly pittance. The majority of those who will receive the award will be well able to turn it to their permanent advantage. The waste which the rescued men have at present to return to the mines will soon wear off, and with the little fund placed at their disposal some of them at least will, no doubt, exert themselves to obtain such additional knowledge as will enable them to attain a good position as colliery

officers. It is gratifying to find that none of the rescued or rescuers are likely to suffer any permanent injury in health. The committee, after a most patient consideration of each case, voted for each of the three widows £50, and to the 10 orphans £30; to a widow whose son died in the rescue £50, and to the four rescued men £50 each, and for the three rescuers £50 each; to the three men saved after 18 hours imprisonment £25 each, and to a boy similarly saved £50. These sums the committee resolved to entrust, as far as the actual distribution went, to Mr. Talbot, M.P., and Mr. Vivian, M.P., the county representatives, and Mr. Forsyth, M.P., to Isaac Pride and to William Beith, £50 each was voted, and to J. W. Howell and Charles Oatridge £50 each, to the two London divers £50 each, and the Cardiff diver £50; to the 24 shift colliers, according to the time at work, £20; to the 25 pumpmen, £12; to the 37 carters, £5; to the two carpenters, £20 each; and the two nurses, £20 each. Plate of the value of 1081, suitably inscribed, was ordered to be presented both to Mr. Wales, Her Majesty's Inspector, and Dr. H. N. Davies, who services throughout the disaster merited much praise; and testimonials varying in value were allotted to seven medical men, 27 engineers and colliery agents at the unanimous wish of the committee. An embossed resolution of thanks was voted to the Rev. D. W. Williams, of Pontypridd, for his great efforts in the relief of the sufferers. The Lord Mayor undertook, at the committee's urgent desire, to proceed to Pontypridd on Friday, Aug. 3, and personally distribute the rewards to the miners. His lordship will during his visit be the guest of Mr. Hussey Vivian, M.P.

REPORT FROM THE FOREST OF DEAN.

July 12.—Since my last report the disturbing element of the district has been pretty well got over. We allude to the attempt to get a lower rate of percentage on wages at Crump Meadow Colliery than at the Forest pits generally. The attempt was made at Trafalgar, Lightmoor, and other places, but signally failed, as, rather than sink lower, the men generally were disposed to strike, wages being at present in many instances lower than in the prosperous times and high prices for coal. After a week's strike at Lightmoor, the Messrs. Crawshaw and Sons consented for the men to resume work at previous wages, work to be ruled as to quantity by current trade. The matter at Trafalgar was not pushed to a strike; but the breach between the manager and workmen at East Slade Colliery has not been adjusted even yet. In fact, numbers of the men are gone in different directions, and are not likely to return, having obtained other kinds of labour. The breach is much to be regretted, as it not only dispersed many of the workmen, but is also likely to prove a serious injury to the proprietors of the colliery, for the reasons which we stated in a recent report. An attempt or two has been made to induce the men to go in to work again, but the success has been almost nil. The company, however, is trying to move in another direction, as an advertisement is out announcing the whole of the New Bowson plant for sale. Close upon 100,000,000 was spent at that place without winning the coal, because, it is now said, the first managers and engineers who undertook the sinking did not understand what they were about, otherwise the coal could have been won at most two-thirds of the cost invested without any good results. This failure was a great injury to the district, as it created unjust prejudices against the locality, and cut off by anticipation a source of profit and prospective employment for a large number of men. Arguing from experience in dealing with other seams, the deep coal at the Bowson would be found to be of excellent quality, as the seams generally improve in quality as they descend towards the centre of the Forest coal basin. Let us hope that the next company will be wiser in devising and in executing their plan for winning the deep coal at the goal under the New Bowson plant.

The Iron Trade is still dull, but the Great Western Iron Company has advertised for plans and tenders for the erection of a third furnace at Sedley, also stores at the same place, and for covering in the bank at Find All level. The Forest Vale Ironworks are under repairs, so that little work is going on there at present. Work at most of the small collieries is reported as almost entirely suspended, as they do not pay except when prices rule high. Steam coal is in fair request, and a new beginning for procuring that class of coal has been made at Moseley, in West Dean. The laying in the water-mains at Cinderford, Little Dean Hill, Steam Mill, &c., is progressing rapidly, the contractor properly judging that fine weather and long days are the most advantageous circumstances under which such work can be done. It was really a pleasure to witness the activity and progress which the men made up through the principal thoroughfares a few days ago as we passed by them at work. It is to be hoped that no great bungle will occur to mar the satisfaction which the completion of so important works as waterworks in such a district ought to be.

APPLICATION OF MOTIVE POWER.—Some important discoveries have been made by Mr. GEORGE BEESLEY, C.E., of Kennington, to whom must be given the honour of showing that when used for locomotive purposes a wheel rotates upon its periphery, and that advantage is gained by setting the cranks dead fore and aft, or at 180° from each other. The impossibility, or otherwise, of encountering a dead point with the cranks so set has been supposed by some engineers to have been already ascertained, but the mistake probably arises from their having used the wrong kind of engine. Mr. Beesley's intention appears to be to run locomotives with two separate (perhaps two on each side of the boiler) single acting condensing engines "as the strokes of the two engines occur alternately." Amongst the advantages of the invention Mr. Beesley claims that by its use much lighter engines than those now employed will have sufficient adhesion to draw an equal load, so that he would seem capable of entirely superseding a previous suggestion for using putty around the driving wheel tyres for the same purpose. By way of appendix he gives a curious little treatise upon the application and resolution of force, which will certainly not subject him to the charge of plagiarism upon the writings of recognised mathematical authorities who have preceded him. Throughout the pamphlet there is evidence of freedom of thought seldom met with, so that it is well worth perusing.

STEAM BOILERS.—The invention of Mr. JAMES WALLAU, of Newcastle-on-Tyne, relates more particularly to high-pressure marine boilers, and consists of peculiar arrangements of the furnaces, tubes, and other internal parts of the boiler, whereby a complete circulation of the water is obtained, the main object of the invention being the prevention of unequal expansion and contraction of boilers, thus insuring greater durability and efficiency. In lieu of placing the furnaces and tubes equally, or nearly equally, on both sides of the boiler they are kept sufficiently to one side to give ample space for the water to return from the top to the bottom of the boiler, after rising to the surface from the furnaces and tubes. In combination with this arrangement he sometimes employs circulating plates, pipes, or suitable casting to improve the circulation, also one or more damper plates to check or regulate the motion of the water, such damper plate or plates being worked from the outside.

MANUFACTURE OF PUDDLED IRON AND STEEL.—The invention of Messrs. MITFORD and LESTER, of Darlington and Middlesborough, consists in the addition to the iron under treatment of spiegeleisen or other similar or analogous carbonising agent in a heated, granulated, or molten state, but by preference in a molten or nearly molten condition, in such proportions and at such times during the progress of manufacture as may be found desirable or necessary. The spiegeleisen, or other similar or analogous carbonising agent, is introduced in a heated, granulated, molten, or nearly molten state into the puddling-furnace when the iron in the latter is in a fit state to receive it, which in most cases will be when the process of puddling is nearly completed, and in such proportions as may be necessary for the better refining and re-carbonising of the iron for either the hard or steely or more soft and ductile kinds of puddled steel or iron. In carrying their said invention into effect it will be understood that either rotary, mechanical, or other ordinary puddling-furnaces may be employed, and also that the spiegeleisen or other similar analogous carbonising agent may be heated or melted in any convenient manner, but when the iron is melted in a separate furnace, such as a cupola, or air furnace, in connection with the process above described, the spiegeleisen or other similar or analogous carbonising agent may be melted with the pig-iron and silicate of iron usually obtained from the sand bottoms of furnaces, such as those which are employed for heating purposes in rolling-mills and forges, and as a flux and refining agent, or it may be used in the molten iron as it is run from the blast-furnace. By means of the

above described method of treatment it will be found that the puddled steel or iron produced will be greatly improved in quality.

IN THE MATTER OF THE COMPANIES ACTS, 1862 AND 1867.

ANGLO-AUSTRALIAN GOLD MINING COMPANY (LIMITED).
NOTICE IS HEREBY GIVEN, that a GENERAL MEETING of the shareholders in the above named company will be HELD on FRIDAY, the 20th day of July instant, at the offices of the company, No. 8, Abchurch Lane, in the City of London, at One o'clock in the afternoon, precisely, for the purpose of passing the following special resolutions, or resolutions to the same effect:

- 1.—That the Liquidator of the Anglo-Australian Gold Mining Company (Limited), in liquidation, be authorised to enter into an arrangement for the transfer of the whole of the property and assets of the company, of whatever nature or description, to a new company to be formed and registered under the Companies Acts, 1862 and 1867, with limited liability, having a nominal capital of £20,000, divided into 20,000 shares of £1 each, in consideration of the said new company paying to the Liquidator of this company a sum not exceeding £1000 to pay the debts and liabilities of this company, and the costs and expenses necessarily incurred in connection with the winding-up of this company, and also in consideration of the allotment of 5000 shares of £1 each fully paid-up in the capital of the said new company, such shares to be distributed *pro rata* amongst the shareholders in this company; 10,000 shares further part of the said capital of such new company to be issued as fully paid up; two of such shares to be allotted as bonus shares in respect of each of the remaining 5000 £1 shares to the subscribers thereof, when and as soon as the full amount of £1 per share shall have been paid on such first mentioned 5000 cash shares, such last-mentioned shares to be offered in the first instance to the shareholders in this company *pro rata*.
- 2.—That if any shareholder shall decline or neglect to declare his willingness to accept the share or shares paid on account of the transfer to the new company, in which he may be entitled, for one month after notice shall have been sent him through the post at his registered address requiring him to make such declaration, such share or shares may be sold by the Liquidator for the best price which can be obtained for the same, and the amount realised by such sale carried to the credit of such shareholder.
- 3.—That any moneys arising from the sale of shares or otherwise which shall not be claimed for a period of six months from the date of the incorporation of the new company shall be paid over to the said new company, subject to such rights as may attach thereto.
- 4.—That the Liquidator shall have full power to continue the works at the said mine pending the carrying out and completing the above arrangements, and pay the costs occasioned thereby out of the funds of the company, the amount so paid to be repaid to the Liquidator by the new company.
- 5.—That the Liquidator have full power to vary and make such modifications in the terms of the said transfer, execute all documents, and do all things which he may find necessary or expedient to give full effect to the above arrangements.

By order, E. W. WINGROVE, Liquidator.

700,000,000 DOLLARS UNITED STATES GOVERNMENT FOUR PER CENT. FUNDED LOAN. IN BONDS ISSUED AND PAYABLE, PRINCIPAL AND INTEREST, IN THE UNITED STATES OF AMERICA.

These Bonds are issued in accordance with the provisions of an Act of Congress, entitled "An Act to authorise the refunding of the National Debt, approved July 14th, 1870, amended by an Act approved January 20th, 1871," and are redeemable at the pleasure of the United States after the 1st July, 1907, in coin of the standard value of the United States on said July 14th, 1870 (Gold Coin), with interest in such coin from the day of their date at the rate of 4 per cent. per annum, payable quarterly on the 1st January, 1st April, 1st July, and 1st October in each year.

The principal and interest are exempt from the payment of all taxes or duties of the United States, as well as from taxation in any form, by or under State, Municipal, or Local Authority.

These Bonds cannot be redeemed until 1907.

MESSRS. N. M. ROTHSCHILD AND SONS,
" J. S. MORGAN AND CO.,
" SELIGMAN BROTHERS,
" MORTON, ROSE, AND CO.,

Are prepared to RECEIVE SUBSCRIPTIONS, at the office, in New Court, St. Swithin's Lane, on account of the above £700,000,000 FOUR PER CENT. BONDS.

Forms of application and particulars can be obtained at the offices of the above-mentioned firms.

Subscription lists will be opened on Thursday, the 12th July, and will be closed on or before Wednesday, the 18th July.

The price of issue is £102½ for every \$500 bond, payable as follows:—

£ 5 0 0	on application.
20 0 0	allotment.
25 0 0	30th August.
25 0 0	17th October.
27 15 0	17th December.

£102 15 0

Scrip will be issued. Interest at the rate of 4 per cent. per annum will be allowed on the instalments from their due dates to the 31st December, 1877, and a coupon for the amount, payable the 1st of January, 1878, will be attached to the scrip. The interest on the first instalment will date from the 25th instant. The Bonds of the Funded Loan are issued in the United States, and will be delivered in London, in exchange for scrip, after payment of the first instalment, with coupons attached, payable quarterly, the first of which will be due 1st April, 1878.

Applications for these bonds must be made in the accompanying form. In case the allotment should not require the whole deposit the surplus will be returned; and if the deposit be insufficient for the first instalment on the amount allotted, the balance required must be paid forthwith.

In case of no allotment being made the deposit of the applicant will be returned.

The failure to pay the whole of the instalments subjects all previous payments to forfeiture.

Subscribers may pay up the remaining instalments under discount at rates to be fixed hereafter.

The bonds may, at the option of the holder, be inscribed, and United States Treasury Cheques for dividends thereon, will be sent from Washington to the registered address of the holder in any part of Europe, on the principle adopted by the Bank of England in paying interests on Consols. An officer of the United States Treasury will remain for some time in London, to inscribe, free of charge, the bonds into the names of such holders as may desire it.

The bonds, to bearer, with coupons attached, are in denominations of \$50, \$100, \$500, \$1000, and if required, \$5000. The registered bonds are in like amounts, with the additional denominations of \$10,000, \$20,000, and \$50,000.

London, New Court, St. Swithin's Lane, 12th July, 1877.

700,000,000 DOLLARS UNITED STATES GOVERNMENT FOUR PER CENT. FUNDED LOAN.

To Messrs. request that you will allot to dollars nominal capital of the above stock, on which enclose the required deposit of £5 per 500 dollars, or £..... and agree to accept that amount, or any less sum that may be allotted to and to pay the balance due, according to the conditions of your prospectus of the 12th July, 1877.

Gentlemen, your obedient servant,
Name in full length.....
Address in full.....
Dated this.....

WILLIAM FRANCIS, M. and C.E., 2, DERWEN VILLAS, MOLD. Over Twenty-five years' experience. Pupils received for a Course of Instruction in Surveying, Dialling, Levelling, Geology, and Mining. Their practical application to the various branches of Metalliferous Mining. Quarrying, &c. Terms on application.

CAPTAIN ABRAHAM FRANCIS
MINING AGENT, ENGINEER, AND SURVEYOR
GOGINAN, ABERYSTWYTH.

BRISTOL MINING SCHOOL.

(ESTABLISHED 1856.)

THE NEXT SESSION BEGINS ON MONDAY SEPT. 9, 1877.—
THE SCHOOL OFFERS A COMPLETE COURSE OF INSTRUCTION IN
MINING AND ENGINEERING, and the work will be found an effective pre-
paration for the Mine Manager's Certificate.
The Laboratory is open to those who wish to study PRACTICAL CHEMIS-
TRY, ANALYSIS, or ASSAYING, though not Members of the School.
There is also in the same Institution a SCHOOL OF APPLIED SCIENCE for
Boys, which prepares for the work of the Mining School and Laboratory.
Prospectuses and any further particulars can be obtained at the Treasurer's
Office, Merchants' Hall, Bristol, where pupils are entered and fees received, and
where also information can be had concerning lodgings.

BRISTOL MINING SCHOOL.

(ESTABLISHED 1856.)

UNDER THE DIRECTION OF THE GOVERNORS OF THE COLSTON
SCHOOLS TRUST.

THE NEXT SESSION BEGINS ON 9th SEPTEMBER, 1877.—
THE FULL COURSE OF INSTRUCTION extends over a PERIOD OF TWO
YEARS, but Students are received who may wish to terminate their Studies at
the end of the First Session.
The work of the School will be found an effective preparation for the Mine
Manager's Certificate.
One day per week is spent in the Field or Mine, and considerable time is de-
voted to the Plotting of Surveys and the Drawing and Study of Mine Machinery.
The Laboratory is also OPEN DAILY as a SCHOOL OF CHEMISTRY
for the instruction of the general public in the Theory and Practice of Chemical
Analysis and Assaying.
There is in the same Institution a SCHOOL OF APPLIED SCIENCE for BOYS,
which affords a suitable preparation for the Mining School or Laboratory.
Prospectuses and any further particulars can be obtained at the Treasurer's
Office, Merchants' Hall, Bristol, where pupils are entered and fees received, and
where also information can be had concerning lodgings.

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Associate of the Royal School of Mines,

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ASSAYS AND ANALYSES MADE OF ORES, FIRE-CLAYS,
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MINING ENGINEERS AND MANUFACTURING CHEMISTS.

CHIEF OFFICE, PALMERSTON BUILDINGS, BISHOPSGATE STREET, LONDON, E.C.

PRINCIPAL WORKS, RFDMOOR, KELLY BRAY, AND WHEAL EDWARD, CORNWALL.

The management of Mines and Chemical Works and the London Agencies of
Provincial and Foreign Manufacturers and Commercial Firms undertaken.

Technical Reports and Surveys of every kind made.

MANAGING DIRECTOR—DR. STEPHEN H. EMMENS.

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MANUFACTURE RAILWAY CARRIAGES AND WAGONS OF EVERY DE-
SCRIPTION, FOR HIRE AND SALE, by immediate or deferred payments. They
also have wagons for hire capable of carrying 6, 8, and 10 tons, part of which
are constructed specially for shipping purposes. Wagons in working order main-
tained by contract. MANUFACTURERS also of IRONWORK, WHEELS, and
EDMUND FOWLER, Managing Director.

WAGON WORKS.—SMETHWICK, BIRMINGHAM.

GLASGOW AND THE HIGHLANDS.

ROYAL ROUTE VIA CRINAN AND CALEDONIAN CANALS,

by ROYAL MAIL STEAMER, "IONA," DAILY, at Seven A.M., and

at GLENCOCK, at Nine A.M.

See bill, with map and tourist fares, free, at Messrs. CHATTO and WINDUS, Pub-
lishers, 74, Piccadilly, London; or by post from DAVID HUTCHESON and Co.,
118, Hope Street, Glasgow.

CARN MARTH COPPER MINE

(LIMITED).

IN THE PARISH OF GWENNAP, CORNWALL.

Capital £10,000, in 5000 Shares of £2 each.

10s. per share on application, and 10s. per share on allotment.

Where no allotment can be made, the deposit will be returned in full.

No call for six months: probably none further will be required.

Directors to be chosen by the Shareholders at first meeting.

BANKERS.

Messrs. GLYN, MILLS, and CO., London.

Messrs. TWEEDY, WILLIAMS, and CO., Redruth, Cornwall.

MANAGER.

Mr. CHAS. BAWDEN, Poldice House, St. Day, Scorrier, Cornwall.

This company is formed for the purpose of working a piece of mining ground
in the parish of Gwennap, the property of His Grace the Duke of Buckingham
and Chas. Trevelyan, Esq., granted for a term of 21 years, at a royalty of 1-18th
dwt. It is situated in the immediate proximity of mines of established value for
copper at the north foot of the well-known granite range of Carn Marth, sur-
rounded by mines that have been immensely productive and profitable. It is
virgin or unexplored ground, in a line of the lodes of the Carn Brea district from
the west, and the lodes of Gwennap from the east, of which well-known district
this ground forms a part.

The Carn Marth grant is about 500 fathoms from east to west on the course of
the lodes, and 300 fathoms in width, affording scope for opening out a deep and
extensive mine. The lodes of Great Consols, Wheal Jewel, and Wheal Damsel
are within its limits. The profits from those mines alone exceeded over £200,000
sterling; the back (surface outcrop) of one has been opened about the centre of
the grant, and a shaft sunk on it 15 fathoms, which proves to be 6 feet wide,
composed of a true copper gosean, in character the same as found on the top
of the great copper deposits of the county; it is also intersected by cross-
courses, to which with in the surrounding mines, and which continued for 40 years
to pay very large dividends. Moreover, an even course of corresponding crys-
talline character to those in connection with the great body of ore found in the
Great Consols, Wheal Jewel, and Wheal Damsel accompanies the Carn Marth
lode; it is, therefore, to be confidently relied on that comparatively little depth
of development is required to ensure the realization of a copper mine of very great
value in Carn Marth.

It is intended to have a 40-in. diameter cylinder steam-engine for this mine, to
ensure its fully efficient development—say, in the first place to a depth of 50 fms.,
at which several of the greatest mines of Gwennap commenced being ore-produc-
ing, proving more and more productive in depth, and paying larger profits than
any mines in the other districts of Cornwall. The copper mines of this district
would altogether such astounding profits as have gained for them a wide
worldly celebrity, many of the leading Cornish families being indebted to them for
their influential position and wealth. It is only intended by the amount of capital
demanded to fix the maximum liability of shareholders, not meaning it to be un-
derstood that anything like so much will be required to open out and establish
Carn Marth as a permanently good dividend-paying mine, which is confidently to
be relied on, will not necessitate a larger expenditure than £5000, paying for all
the giving a rich prize for comparatively little money.

The shareholders will have the full benefit of the capital subscribed, there being
no claim for promotion money or free shares, the object is to offer and open out a
good mine on the principle of equitably advantageous co-operation, the cost of
develping and out-of-pocket expenses consequent on its acquirement being, of course,
charged to the company. One moiety of the capital will be privately subscribed,
leaving 2500 shares to be issued, which will be allotted according to priority of
application.

Shares to be applied for by letter, remitting the first payment of 10s. per share,
either to the manager or bankers of the company.

MESSRS. THORNYCROFT AND CO

FINANCIAL AGENTS AND SHARE BROKERS,

51, SOUTH JOHN STREET, LIVERPOOL.

MR. R. TREDINNICK, DEALER IN STOCKS AND SHARES,
has special business and special information as to the true position and
value of the following Mine Shares:—
Leant Hills. Tankerville. Dyffell. Van Consols. Cathedral.
Roman Gravel. Penrith. Llanrwst. Cathedral.
Devon Great Consols. Penrith. Llanrwst. Cathedral.

Investors confidentially advised by special appointment or letter.

R. TREDINNICK, "EXCHANGE," 66, COLEMAN STREET, E.C.

In the Court of the Vice-Warden of the Stannaries.

Stannaries of Cornwall.

IN THE MATTER OF THE COMPANIES ACTS, 1862 and 1867, and
of the NEW CHIVERTON MINING COMPANY (LIMITED).—TO BE
SOLD, under the direction of the Registrar of the said Court, on Thursday,
the 26th day of July instant, at Eleven o'clock in the forenoon, at the NEW CHIVERTON
MINE, in the parish of Perranzabuloe, within the said Stannaries, in One
or more Lots (subject to such conditions as shall be then and there stated and pro-
duced), all that the INTEREST of the said company of and in the SETTS under
which its mining operations have been carried on, together with the WHOLE
of the

MINING PLANT, MACHINERY, MATERIALS, AND EFFECTS,

Belonging to the said company, and being within and upon the said Mine, and

comprising:—

ONE 40 in. cylinder PUMPING ENGINE, with ONE BOILER, 10 tons.

ONE 4 horse power ENGINE and BOILER, with crusher attached.

Large shears and two shives; 8 arm capstan; a quantity of 9, 11,
12, and 15 in. pumps; 11 in. main rods; rod plates and bolts; 2½ in. and 1½ in.
iron rods; 120 fms. iron stave ladders; 5 in. pole and lift for condensing water;
two horse whims; shaft tackle and shives; several whins and other kiddles; wind-
large quantity of launders; railroad and stands; dressing floors; two jigg-
chimes and hutchers; frames and kieves; several wood houses; quantity of chains;
wire and hemp ropes; smiths' bellows; vices, anvils, jacks, and tools; smith and
miners' tools; grindstone; screwstock; taps and plates; beams, scales, and weights;
a quantity of new and old iron; powder; candles; brass; new and old timber;
miners' lead; account house furniture; and a quantity of other materials and effects
in general use in mines.To inspect the above, apply to the Bailiff in charge at the mine; and for further
particulars to Mr. CHARLES WILLIAM CLINTON, the Official Liquidator of the said
company, at the Stannaries Court Office, Truro.HOUGE, HOCKIN, and MARRACK, Truro.
(Solicitors for the said Official Liquidator.)

Dated Stannaries Court Office, Truro, July 11th, 1877.

KING ARTHUR SILVER-LEAD MINE,

TINTAGEL CASTLE, near CAMELFORD, NORTH CORNWALL.

VALUABLE PLANT AND MACHINERY FOR SALE.

MESSRS. EVELYN AND SON WILL SELL, BY PUBLIC

AUCTION, on the MINE, at the Castle Tintagel, on Monday, July 16th,
at Two o'clock in the afternoon, the undermentioned

MACHINERY AND PLANT, viz:—

ONE 30 horse power TURBINE WHEEL, with drawing and pumping ma-
chinery, complete, nearly new.ONE 10 horse power portable STEAM ENGINE; Allen's double expansive
patent cylinder, with gear for pumping attached; one balance bob, with sky rod;
poppet heads, with pulley wheels; ½ in. chain, 140 ft.; one whim kibble, nearly
new; about 19 fms. of 8 in. pumps; working barrel and windbore, complete; three
shaft ladders; one chain ditto; timber in shaft; capital large crab wind and
frame; slate cistern, 90 gallons; set of patent pulley blocks to carry 4 tons; wind-
lass and two kiddles; two large oak doors and frame; about 2 fms. 10 in. pumps
and tends for supply of turbine, nearly new; two timber bridges; 200 fms. of
glazed earthenware pipes; large 8 in. warp rope; 9 ft. 8 in. windbore; jigg-
machine, complete, &c.SMITHS' SHOP.—32 in. bellows, anvil, vice, iron horse, grinding stone and frame,
iron screw jack, sundry other smiths' tools, all nearly new; old and new iron, with
sundry other lots used in mines.Also a large American kitchen stove, with cooking utensils, complete; large deal
table, eight chairs, &c.The whole of the machinery will be found to be in good condition, being nearly
new, and can be shipped on the spot.Dated Government and General Emigration Offices,
Camelford, July 2nd, 1877.

BY ORDER OF THE MORTGAGEES—DURHAM.

IMPORTANT SALE OF THE COLLIERIES OF THE

ORIGINAL HARTLEPOOL COLLIERIES COMPANY

(LIMITED). IN LIQUIDATION.

MR. CHARLES BROUGH WILL SELL, BY AUCTION, at the

Turk's Head Hotel, Grey-street, Newcastle upon Tyne, on Thursday,
August 9th, at One o'clock precisely, in Two Lots, the IMPORTANT and WELL-
KNOWN CURRENT-GOING SEA SALE COLLIERIES, in the county of Dur-ham, called WHEATLEY HILL, THORNBURY, and LUDWORTH, containing
with their associated COAL FIELDS 3870 acres, thereabout situated together with
COLLIERY PLANT OF PITS, ENGINE HOUSES, ENGINES, BOILERS,
machinery, railways, coke-ovens, brickworks, and gasworks, agent's and work-men's houses, cottages, workshops, stabling, and other erections and buildings.
Particulars, with plan and conditions of sale, may be had gratis, in London, of
Messrs. DAVENPORT and SON, Solicitors, 13, Holles-street, Cavendish-square, W.;
Messrs. DAVIDSON and CO., 70, Basinghall street, E.C.; Messrs. BELL, BRODRICK,
and GRAY, 9, Bow Churchyard, E.C.; and R. SMITH, Esq., Official Liquidator,
4, New Bond-street, E.C.; and in Gateshead-on-Tyne, of J. W. SWINBURNE, Esq.,
Town Hall, and in Newcastle-on-Tyne, of the Auctioneer, Blackett-street.The collieries may be viewed on application to PHILIP COOPER, Esq., at the
Thornbury Colliery. Postal address—Thornbury Colliery, Ferry Hill, Durham.

THE TOLGUS CONSOLS (LIMITED).

THE DIRECTORS of this COMPANY will RECEIVE TENDERS

FOR THE SUPPLY of the following MACHINERY, which may be either

NEW or SECONDHAND, but must be subject to the approval of the Manager
and Engineer of the Mines:—ONE 80 in. cylinder PUMPING ENGINE, with TWO BOILERS, not less than
10 tons each.ONE WINDING ENGINE, of not less than 24 in. cylinder, with ONE BOILER,
of 10 tons, and winding gear.

ONE STEAM CAPSTAN, adapted for steel rope.

70 fms. of 15 in. PUMPS.

TWO 15 in. PLUNGER POLES, with cases and bottoms, complete.

The tenders must be sent to the offices of the company, 30, Great St. Helen's,
London, E.C., addressed to the Secretary, E. J. BARTLETT, Esq., on or before the
20th August next.Particulars of the engines, &c., should be stated, together with terms of payment.
The directors do not bind themselves to accept the lowest or any tender.

30, Great St. Helen's, London, E.C.

SLATE QUARRY, NORTH WALES.

FOR SALE, the LEASE and PLANT of a VALUABLE

QUARRY, about TWO HUNDRED AND FIFTY ACRES in extent, re-
cently opened and producing SLATE of the best quality. Advantageously
situated for profitable and inexpensive working.Apply to MARSH, MILNER, and Co., Surveyors and Land Agents, 54, Cannon-
street, London, E.C. Personally inspected.

SLATE QUARRY.

FOR SALE, a SLATE QUARRY in NORTH WALES, in full

WORKING ORDER. The quality of the Slate is very good, and terms
favourable. Suitable either for a company or for private investment. Capital
required, £3000. Satisfactory reasons given why it is being sold.For full particulars address, "Delta," MINING JOURNAL Office, 26, Fleet-street,
London, E.C.

SLATE QUARRY IN FULL WORK.

TO BE LET, OR SOLD.—

Four hundred tons of Slate made monthly, and delivered in Great Western
Railway trucks from quarry at 6d. per ton.Books may be inspected, and all information given, on application to "P. C.,"
MINING JOURNAL Office, 26, Fleet-street, London, E.C.

LEAD MINE NEAR CARSPHAIRN, STEWARTY OF

KIRKCUDBRIGHT.

TO BE LET, for such number of years as may be agreed

upon.—

THE WOODHEAD LEAD MINE,

On the CRAIGENGILLAN ESTATE, situated in the Parish of CARSPHAIRN,
and Stewarty of KIRKCUDBRIGHT.This Mine was opened in 1838, has been wrought ever since, and has yielded
a large quantity of lead of the finest quality.

The Plant, Machinery, &c., can be had at a valuation.

JAMES M'CALL, at the Mine, will show the underground workings, as also the
plans and sections; and for further particulars application may be made to ALEX-
ANDER M'CURRIEN, Solicitor, Ayr; or to Mr. THOMAS SMITH, Land Steward,
Berthel Main, Dalmeilston, Ayrshire.

Ayr, 18th June, 1877.

HEMATITE IRON ORE ROYALTY.

AT MOOR ROW, BIGGIGG MOOR, NEAR WHITEHAVEN.

TO BE LET, BY TENDER, for a term of years, to commence

from the 1st September, 1877.—

THE IRON ORE under SEVENTY-FIVE ACRES of LAND at MOOR ROW,
in the parishes of Cleator and Egremont, in the county of Cumberland, in the
occupation of Mr. John Postlethwaite, of the Hollins, Whitehaven.This Royalty is situated in the centre of the Biggig District, is bounded on the
north-west and south by mines of Messrs. Lindow, and on towards the east by
mines of Messrs. Alnsworth and Co. and Messrs. Burnet, Brown, and others,
and its immediate neighbourhood is well known to the mining community by Lord
Lecountfield, Messrs. Lindow, John Stirling, Esq., and the Cleator Iron Ore Com-
pany, which latter company are sinking a pit adjoining a portion of the eastern
boundary of the estate.The royalty has been actively worked during the last twenty years, and large
quantities of ore have been raised from shallow workings, extending over an area
of about twenty acres. The present working shaft is in good condition, and is
supplied with adequate engine power, and all necessary machinery and plant. It
is connected with the Cleator and Egremont Railway by a branch line, and the
material can be tipped into wagons direct from the shaft.The ore of the Biggig District is remarkable for its purity and high metallic
yield, and commands the highest price.Tenders must be endorsed "Tender for Moor Row Royalty," and will be received
by Mr. BROWN, Solicitor, 12, Scotch street, Whitehaven, up to the 2nd August,
immediately after which date the tender will be declared. The tenders do not, how-
ever, bind themselves to accept the highest or any tender.After the 18th June, conditions of letting may be had, and plans showing the
royalty, underground workings, and adjoining mines, may be seen on application
to Mr. GEORGE GREY, M.E., New Lower-street, Whitehaven; or to Mr. BROWN,
12, Scotch street, Whitehaven.—7th June, 1877.

BEAULIEU WHITE BRICK AND TILE WORKS.

TO BE LET, the above LONG-ESTABLISHED WORKS, with
an INEXHAUSTIBLE SUPPLY of the FINEST CLAY for the manufacture
of WHITE FACING BRICKS, TILES, and ORNAMENTAL GOODS, together
with all necessary kilns, drying sheds, and with or without steam power. The
works adjoin the Beaulieu River, which is navigable for ships of considerable
tonnage.

For particulars, apply to Mr. GEORGE RICHARDSON, Manor Office, Beaulieu,
Southampton.

CRENVER AND WHEAL ABRAHAM UNITED MINES,

CROWAN, NEAR CAMBORNE, CORNWALL.

TO BE SOLD, BY TENDER, either in One Lot or separately,

all the PUMPING, WHIM, and other ENGINES, BOILERS, CALCINER,
PNEUMATIC STAMPS, CRUSHER, and other remaining MACHINERY of
these mines.May be viewed at the Mines, and catalogues and forms of tender may be ob-
tained on application to Messrs. GOOD, DANIELS, and Co., 7, Poultry, London;
or Mr. W. J. JOHNS, Edward-street, Truro.Tenders to be sent in to Messrs. GOOD, DANIELS, and Co., as above, on or before
16th July, marked "Crenver Tender."

FOREST OF DEAN, GLOUCESTERSHIRE.

FOR SALE, and IMMEDIATE DELIVERY, in One Lot, or

separately, all that

VALUABLE and EXTENSIVE COLLIERY PLANT

At the NEW BOWSON COLLIERY:—

1.—Consisting of ONE doubled powered PUMPING ENGINE, with 85 inch
cylinder and 10 ft. stroke; two lifts of pumps, 18 in. diameter, and one lift 20 in.
diameter; pump rods, rod plates, plungers, buckets, clacks, and all complete.2.—ONE powerful CRAB ENGINE, with a pair of 12 in. cylinders and 2 ft.
stroke. Also, a JACK ENGINE, with 12 in. cylinder and 2 ft. stroke.

3.—ONE WINDING ENGINE, with a pair of 20 in. cylinders and 4 ft. stroke.

4.—FOUR BOILERS, 50 ft. long, 5 ft. diameter, with fittings, &c., complete,
in working order.

5.—TWO BOILERS, 30 ft. long, 6 ft. 6 in. diameter, complete.

6.—SAW MILL ENGINE, with cylinder 12 in. diameter, 2 ft. stroke, and cast-
iron circular saw frame, complete; four horse crabs, three sets of head gear, &c.

For further particulars and leave to view, apply to—

Mr. BURDESS, CINDERFORD, GLOUCESTERSHIRE.

NOTICE TO COLLIERY OWNERS, AND OTHERS.

FOR SALE, EVERY DESCRIPTION OF COLLIERY and

ENGINEERS' STORES.

Apply to GEORGE RIDLEY, M.E., Grease Manufacturer, Coal Fitter, and Metal
Broker, Trinity Chambers, Quayside, Newcastle-on-Tyne.

VERY VALUABLE MINES—SOUTH-WEST OF

IRELAND.

EXTENSIVE and RICH MINES OF SILVER-LEAD,

BLENDE, COPPER, &c., which require only to be drained of water in
order to make immediate returns of ore. Any amount of machinery may be
driven by water-power.Capitalists will find this a safe and profitable investment; and reliable in-
formation may be obtained on application to Capt. W. THOMAS, who has had
nearly 40 years' experience in the management of Mines in Ireland.

Cappagh Mine, Ballydehob, Co. Cork, May 28th, 1877.

YORKSHIRE LEAD MINES.

FULL PARTICULARS OF THE PRESENT and FUTURE

PROSPECTS of the YORKSHIRE LEAD MINES may be obtained on
application to "A. B.," Post Office, Pateley Bridge, Yorkshire.

FOR SALE, a 14-horse power PORTABLE STEAM ENGINE,

with link motion reversing gear, also gear to wind and pump.

A 25-horse power PORTABLE

An 18-horse power VERTICAL STEAM ENGINE, and a 9½ in. cylinder VER-
TICAL ENGINE, and combined winding drum.

A 6-ft. PAN MORTAR MILL, VERTICAL ENGINE, and BOILER.

Apply to—

BARROWS and STEWART, ENGINEERS, BANBURY.

FOR SALE, at NEW PEMBROKE MINE, CORNWALL.—

An excellent 80 in. cylinder PUMPING ENGINE, with FOUR good 12 ton
BOILERS.

25 in. DRAWING ENGINE, and TWO BOILERS.

TWO SPARE BOILERS.

THREE IRON STAMPS AXLES.

100 fathoms FLAT RODS, 3½ inch.

A quantity of ROD PLATES and other MATERIALS.

Apply to Mr. JOHN POLKINGHORNE, PAR OFFICE, PAR STATION.

DISCOVERY OF SILVER AT WHEAL NEWTON.—

This mine is now the RICHEST SILVER MINE in the United King-
dom. The next DIVIDEND will be DECLARED in July. Full information
may be obtained, and shares may be purchased or sold through any respectable
sharedealer, or on application to our principal offices, 134, Palmerston Buildings,
Bishopsgate-street, London, E.C.

EMMENS and Co. (Limited), Mining Engineers and Manufacturing Chemists.

MALLEABLE IRON CASTINGS,

Every Description.

W. B. MAPPLEBECK, JUN.,

21 and 22 LOVEDAY STREET,

BIRMINGHAM.

NOTICE TO COLLIERY PROPRIETORS, &c.

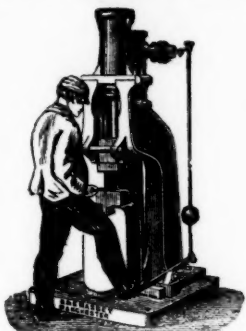
B. & S. MASSEY, OPENSHAW, MANCHESTER.

Prize Medals—Paris, 1867; Havre, 1868; Highland Society, 1870; Liverpool, 1871; Moscow, 1872; Vienna, 1873; Scientific Industry Society, 1875; Leeds, 1876; Paris, 1876; Manchester and Liverpool Society, 1876; U.S. Centennial, Philadelphia, 1876.

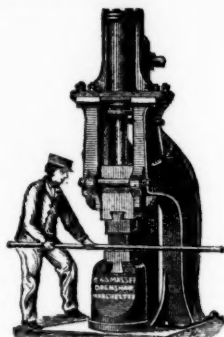
PATENTEES AND MAKERS OF DOUBLE AND SINGLE-ACTING

STEAM HAMMERS

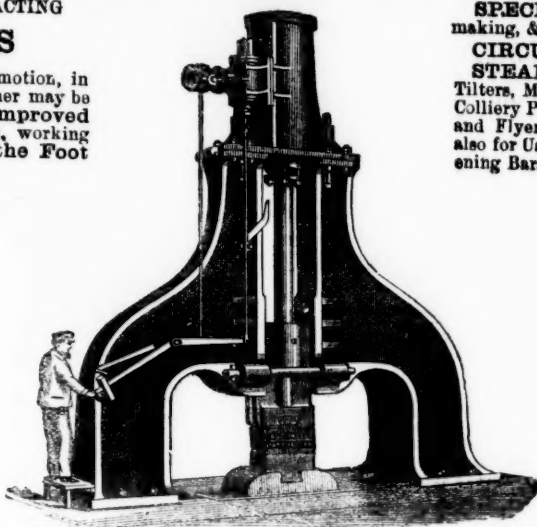
Of all sizes, from $\frac{1}{2}$ cwt. to 20 tons, with self-acting or hand motion, in either case giving a perfectly DEAD BLOW, while the former may be worked by hand when desired. Large Hammers, with Improved Framing, in Cast or Wrought Iron. Small Hammers, working up to 500 blows per minute, in some cases being worked by the Foot of the Smith, and not requiring any separate Driver.



Small Hammer with Foot Motion.



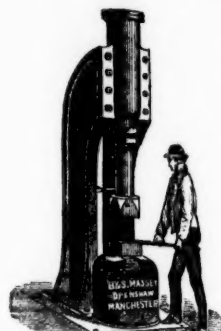
General Smithy Hammer.



Steam Hammer for Heavy Forging.



Special Steam Stamp.



General Smithy Hammer.

From 60 to 100 Steam Hammers and Steam Stamps may usually be seen in construction at the Works.

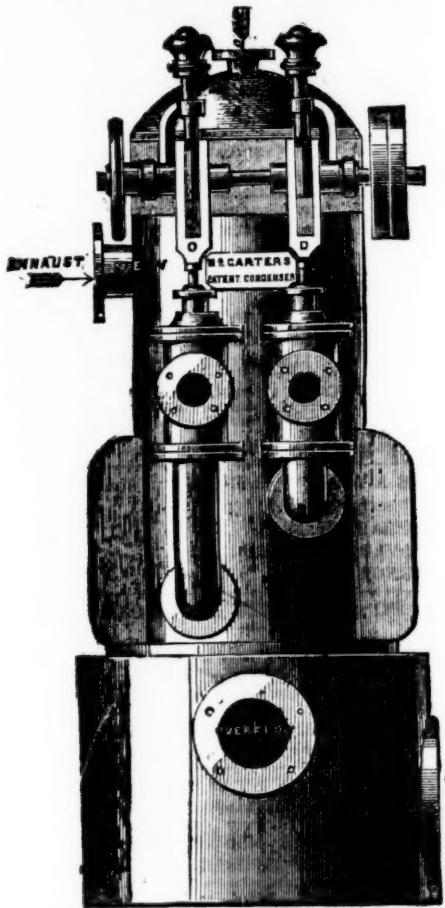
SPECIAL STEAM STAMPS, for Forging, Stamping, Punching, Bolt making, &c.

CIRCULAR SAWS for Hot Iron.

STEAM HAMMERS for Engineers, Machinists, Shipbuilders, Steel Tilters, Millwrights, Coppersmiths, Railway Carriage and Wagon Builders, Colliery Proprietors, Ship Smiths, Bolt Makers, Cutlers, File Makers, Spindle and Flyer Makers, Spade Makers, Locomotive and other Wheel Makers, &c. also for Use in Repairing Smithies of Mills and Works of all kinds; for straightening Bars, bending Cranks, breaking Pig-iron, &c.

LICENSED MAKERS.

KIRK, RAMSDEN, AND CO.
(LIMITED)
HUDDERSFIELD.



These Condensers can be placed inside or outside of the engine-house. They draw their own injection water, and require no foundation. Specially adapted to Pumping and Winding Engines, effecting a saving from 20 to 30 per cent. in coal, and increase the power of the Engine.

Engineers, Millwrights, Founders,
AND
FORGE PROPRIETORS.

Makers of Pumping, Winding, and Blowing Engines
Condensing and Non-condensing.
Horizontal and Beam Engines for all purposes.

G. HUTCHINSON AND CO.,
FORTH BANKS OIL WORKS,
NEWCASTLE-ON-TYNE.

Reg to draw the attention of COLLIERY OWNERS and ENGINEERS to the Oils prepared by their special process. They never clog nor corrode, but keep the bearings cool and clean, and will be found the best and most ECONOMICAL LUBRICANTS at present in the market, being very DURABLE, UNIFORM IN QUALITY, and CHEAP. Prices, from 2s. Specially ADVANTAGEOUS RATES FOR LARGE CONSUMERS. References to many eminent firms who have used them constantly for years, amongst whom may be mentioned Sir W. Armstrong and Co.; Elswick Engine and Ordnance Works, Newcastle; R. Stephenson and Co., Engineers, Newcastle; E. and W. Hawthorn, Engineers, Newcastle; Hawkes, Crawshaw, and Sons, Engineers, Gateshead-on-Tyne; Abbott and Co., Engineers, Gateshead-on-Tyne. Samples, prices, &c., on application. AGENTS WANTED.

THE NEWCASTLE DAILY CHRONICLE
(ESTABLISHED 1764.)
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER
Office, Westgate-road, Newcastle-upon-Tyne; 50, Howard street, North Shields; 195 High-street, Sunderland.

THE "CRANSTON" ROCK DRILL

SUITABLE FOR
QUARRYING, SINKING SHAFTS, SUBMARINE BLASTING, TUNNELLING, DRIVING ADITS,
Is the MOST SIMPLE and ECONOMICAL DRILL now in use.
BOILERS; AIR COMPRESSORS, worked by Hydraulic or Steam-power; STEEL for MINING DRILLS; PUMPING, and all other MINING MACHINERY supplied.

For Prices, Estimates, and other Particulars, apply to—

J. G. CRANSTON, 22, GREY STREET,
NEWCASTLE-ON-TYNE.

Mr. TAIT, Manager, East Hetton Quarry Company's Works, Coxhoe, Durham, writing on May 12, 1876, says—"I have pleasure in testifying to the value of your Rock Drills. The two you supplied us with about six months ago are giving us entire satisfaction. The cost of drilling by machine is less than ONE-FOURTH THAT OF DRILLING BY HAND. By the use of the Drills we have been able very greatly to increase the out-put of stone without increasing the number of men employed."

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL.
MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD.

LONDON OFFICES.—35, QUEEN STREET, CITY. PARIS DEPOT.—12, RUE DES ARCHIVES.
NEW YORK STORE.—102, JOHN STREET.

MANCHESTER WIRE WORK.

NEAR VICTORIA STATION, MANCHESTER

(ESTABLISHED 1790).

JOHN STANIAR AND CO.,

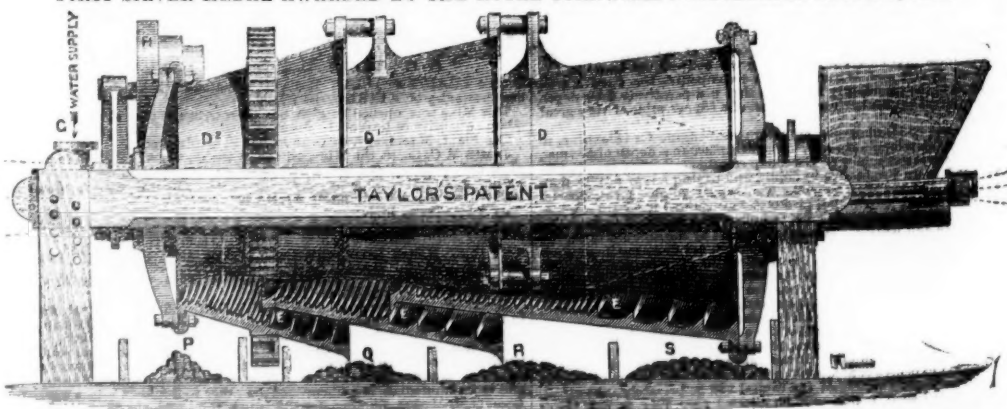
Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for
LEAD AND COPPER MINES.

Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper.

EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES.

Shipping Orders Executed with the Greatest Dispatch.

FIRST SILVER MEDAL AWARDED BY THE ROYAL CORNWALL POLYTECHNIC SOCIETY, 1876.



TAYLOR'S PATENT DRUM DRESSER,

FOR SEPARATING AND SIZING MINERAL AND OTHER SUBSTANCES.

By the aid of this invention any materials, which are of different specific gravity, can be concentrated and sorted mechanically while in the case of ores the fine mineral is brought up with the larger particles instead of being washed into the waste—a most important feature.

This machine uses very little water in proportion to the quantity of material treated, and will be found a most useful and efficient dressing apparatus.

For further particulars, and to see machines at work, apply to the Patentee,

H. E. TAYLOR, 15, Newgate Street, Chester.

NOBEL'S DYNAMITE

Is the MOST ECONOMICAL and POWERFUL EXPLOSIVE for every kind of MINING and QUARRYING OPERATIONS; for blasting in hard or soft, wet or dry ROCKS; for clearing land of TREE ROOTS and BOULDER STONES; for rending massive BLOCKS of METAL; for SUBAQUEOUS and TORPEDO purposes; and for recovering or clearing away of WRECKS, &c.
ITS SAFETY is evidenced by the total ABSENCE OF ACCIDENTS in transit and storage; it is insensible to heavy shocks its **GIANT POWER** being only fully developed when fired with a powerful percussion detonator, and hence its great safety.
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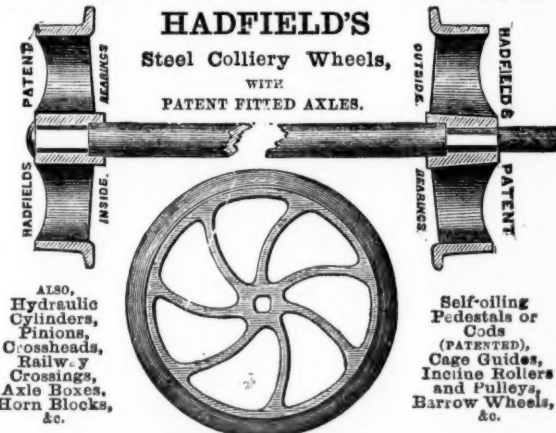
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THE MINING SHARE LIST.

BRITISH DIVIDEND MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
1500	Alderley Edge, c. Cheshire	10 00	—	—	12 11 8.	0 8 0.	Jan. 1876
15000	Balmby, c. W. Yorkshire	1 00	—	—	0 2 0.	0 2 0.	Jan. 1876
30000	Bampfyde, c. i. m. Devon	1 00	—	—	0 2 0.	0 2 0.	Jan. 1876
200	Batallack, c. St. Just	119 80	25	30 26	619 15 0.	0 0 0.	Aug. 1872
4000	Brockwood, c. Buckfastleigh	1 18 0	14	14 14	3 16 0.	0 2 0.	Nov. 1876
2000	Bryn Alyn, c. Denbigh (101 sh.)	1 00	—	—	0 7 0.	0 7 0.	Jan. 1877
8000	Cargill, c. Newlyn	6 00	—	—	4 16 3.	0 12 6.	Oct. 1872
8000	Cashwell, c. Cumberland	2 10 0	—	—	1 9 0.	0 2 0.	Jan. 1876
10000	Carn Brea, c. i. Illogan	26 7 6	30	2 23	304 0 0.	1 0 0.	Jan. 1877
2450	Cook's Kitchen, c. Illogan	23 9 9	—	—	11 17 0.	0 7 0.	Feb. 1874
10240	Devon Gt. Consols, c. Tavistock	1 00	—	—	116 15 0.	0 5 0.	July 1877
4000	Dolcoath, c. i. Camborne	10 14 10	30	28 30	111 11 3.	0 5 0.	July 1877
1000	East Black Craig, c. i. Scotland	8 00	—	—	0 10 0.	0 10 0.	Feb. 1877
1000	East Durham, c. i. Cleveland	2 16 8	—	—	14 19 0.	0 2 0.	Oct. 1877
1000	East Durham, c. i. Cleveland	2 16 8	—	—	235 10 0.	1 0 0.	Oct. 1876
6000	East Pool, c. i. Illogan	0 9 9	—	—	15 2 3.	0 2 0.	June 1877
2000	Foxdale, c. i. Isle of Man	25 00	—	—	82 5 0.	0 10 0.	Feb. 1876
40000	Glasgow Carr, c. i. [30,000 £1 p. 10,000	15 00	—	—	0 12 10.	0 0 6.	Mar. 1876
15000	Great Dyflid, c. i. Montgomeryshire	4 00	—	—	0 2 6.	0 2 6.	Apr. 1876
615	Great Laxey, c. i. Isle of Man	4 00	—	—	22 3 0.	0 10 0.	July 1877
2000	Great Retallack, c. i. Perranarabute	5 18 6	—	—	0 1 6.	0 1 6.	May 1876
2000	Great West Van, c. i. Cardigan	2 00	—	—	0 2 0.	0 2 0.	Jan. 1876
20000	Grognon, c. i. Cardigan	2 00	—	—	115 0 0.	0 3 0.	Aug. 1874
9830	Gunnelslake (Clitters), c. i. t.	5 00	—	—	0 12 0.	0 4 0.	Feb. 1877
1024	Herdfoot, c. i. near Llanelli	8 10 0	—	—	62 0 0.	1 0 0.	Oct. 1876
18000	Hingham Down, c. i. Calstock	0 40	—	—	0 1 0.	0 1 0.	Oct. 1876
6000	Holmhead, c. i. s. i. Callington	1 00	—	—	0 1 6.	0 6 0.	Apr. 1877
20000	Leadhills, c. i. Lanarkshire	6 00	—	—	0 3 11 0.	0 4 0.	Mar. 1876
14000	Lisburne, c. i. Cardiganshire	15 10 0	80	75 80	781 10 0.	1 0 0.	Nov. 1876
1000	Lovell, c. i. Westmorland	0 16 0	—	—	0 9 0.	0 4 0.	Nov. 1876
9000	Marke Valley, c. i. Linkinhorne	5 00	—	—	0 17 6.	0 1 8.	Jan. 1876
9000	Minera Mining Co., c. i. Wrexham	5 00	—	—	67 0 2.	0 2 0.	Jan. 1876
20000	Mining Co. of Ireland, c. i. t.	7 00	—	—	23 11 6.	0 3 8.	May 1876
444	North Busy, c. i. Chacewater	3 8 8	—	—	1 10 0.	1 0 0.	July 1877
10240	North Hendre, c. i. Wales	2 10 0	—	—	1 10 0.	0 2 8.	June 1877
2800	Old Treburt, c. i. ordinary shares	1 00	—	—	4 13 0.	0 12 0.	Sept. 1872
2850	Old Treburt, c. i. ordinary shares	1 00	—	—	0 9 0.	0 9 0.	Feb. 1874
6000	Pedn-ar-dre, c. i. Redruth	0 6 6	—	—	0 1 4 0.	0 8 0.	July 1874
8000	Pennalls, c. i. St. Agnes	3 00	—	—	0 9 0.	0 9 0.	June 1877
6000	Pennant, c. i. bar, North Wales	5 00	—	—	3 18 3.	0 2 0.	July 1876
6000	Penrhyndar, c. i. Gwynedd	2 00	—	—	0 2 8.	0 2 0.	Mar. 1877
12000	Phenistrall, c. i. t. Link	3 4 9	—	—	2 9 6.	0 4 0.	Nov. 1876
18000	Prince Patrick, c. i. Holywell	1 00	—	—	0 14 0.	0 1 3.	Jan. 1876
4000	Providence, c. i. Llanelli	21 6 7	—	—	104 12 6.	0 10 0.	Sept. 1877
12000	Roman Gravel, c. i. Salop	7 10 0	—	—	7 10 0.	0 8 0.	May 1877
512	South Carron, c. i. Cleddau	6 8 8	120	110 120	758 10 0.	2 0 0.	July 1877
6128	South Condurrow, c. i. Camborne	6 8 8	—	—	2 12 0.	0 6 0.	May 1877
12000	St. Harmon, c. i. Montgomery	3 00	—	—	0 7 0.	0 3 0.	Jan. 1877
10000	St. Patrick, c. i. (2000 sh. issued)	1 00	—	—	4 17 0.	1 0 0.	Oct. 1876
12000	Taukerville, c. i. Salop	6 00	—	—	50 8 3.	0 5 0.	May 1877
6000	Tinctor, c. i. Pool, Illogan	9 00	—	—	21 11 6.	0 18 0.	June 1877
9000	Van, c. i. Llanidloes	4 50	—	—	55 0 0.	0 10 0.	Jan. 1877
3000	W. Chertson, c. i. Perranarabute	12 10 0	—	—	1 19 0.	0 4 0.	July 1876
173	West Fowles, c. i. Redruth	10 00	—	—	20 15 0.	1 0 0.	June 1877
612	West Toulgo, c. i. Redruth	10 00	—	—	3 12 6.	0 5 0.	Oct. 1872
2048	West Wheel Franchise, c. i. Illogan	18 13	—	—	63 10 0.	1 0 0.	Nov. 1876
12000	West Wheel Valley, c. i. Montgomery	3 00	—	—	13 0 0.	1 0 0.	Aug. 1877
612	Wheel Basset, c. i. Illogan	21 2 8	—	—	8 5 0.	0 5 0.	May 1877
1024	Wheel Eliza Consols, c. i. St. Austell	20 00	—	—	11 19 6.	0 2 6.	Dec. 1874
2048	Wheel Killy, c. i. St. Agnes	5 4 8	—	—	0 2 6.	0 2 6.	Apr. 1877
2500	Wh. Newton, c. i. s. i. Harrowbarrow	1 00	—	—	522 10 0.	4 0 0.	Oct. 1876
80	Wh. Newton, c. i. s. i. Harrowbarrow	56 00	—	—	52 9 0.	2 8 0.	Mar. 1877
6000	Wh. Prussia, c. i. Redruth	2 00	—	—	0 10 6.	0 4 0.	Oct. 1876
25000	Wicklow, c. i. s. i. Wicklow	2 10 0	—	—	—	—	—
10000	Wye Valley, c. i. Montgomery	3 00	—	—	—	—	—

FOREIGN DIVIDEND MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
85000	Alamillos, c. i. Spain	2 00	—	—	1 17 3.	0 1 0.	Mar. 1877
30000	Almaden, c. i. Spain	1 00	—	—	0 8 3.	0 1 0.	May 1876
20000	Australian, c. i. South Australia	1 00	—	—	0 18 0.	0 2 6.	Aug. 1876
10000	Battle Mountain, c. i. (2000 sh. issued)	5 00	—	—	0 10 0.	0 10 0.	Nov. 1872
15000	Birdseye Creek, c. i. California	4 00	—	—	0 14 0.	0 2 6.	June 1876
12320	Burra Burra, c. i. So. Australia	5 00	—	—	70 0 0.	0 10 0.	Oct. 1872
20000	Cape Copper Mining, c. i. So. Africa	7 00	—	—	28 15 0.	0 1 0.	Oct. 1872
40000	Cedar Creek, c. i. California	8 00	—	—	0 8 0.	0 2 6.	June 1876
15000	Colorado, c. i. Colorado	10 00	—	—	2 8 0.	0 2 6.	June 1876
10000	Copago, c. i. Chile	15 15 0	—	—	0 13 6.	0 3 0.	Nov. 1876
100000	Don Pedro North of Rey	18 15 0	—	—	7 11 5.	0 3 0.	May 1876
23500	Eberhardt and Aurora, c. i. So. Aust.	10 00	—	—	2 9 0.	0 2 0.	Mar. 1877
20000	English and Australian, c. i. So. Aust.	2 10 0	—	—	1 8 0.	0 3 0.	Dec. 1876
80000	Flagstaff, c. i. Utah	10 00	—	—	2 15 9.	0 1 0.	Mar. 1877
20000	Fortuna, c. i. Spain	2 00	—	—	0 1 0.	0 1 0.	Mar. 1877
55000	Frontino & Bolivia, c. i. New Gran.	2 00	—	—	0 1 0.	0 1 0.	Mar. 1877
30000	Gold Reef, c. i. South Africa	1 00	—	—	0 2 4.	0 4 0.	Oct. 1876
90000	Kapunda, c. i. South Africa	1 00	—	—	0 2 4.	0 4 0.	Oct. 1876
20000	Last Chance, c. i. Australia	1 80	—	—	0 14 0.	0 2 0.	July 1876
15000	Linares, c. i. Spain	8 00	—	—	16 17 2.	0 9 0.	Mar. 1877
60000	London and Australia, c. i. t.	2 00	—	—	0 1 0.	0 1 0.	July 1876
7837	Lusitania, Portugal (25 shares)	3 10 0	—	—	1 11 8.	0 1 6.	Mar. 1873
5500	Mammoth Copperopolis of Utah, c. i.	10 00	—	—	0 8 0.	0 8 0.	Dec. 1872
18000	Mountain Chief, c. i. Utah	10 00	—	—	6 0 0.	0 4 0.	Jan. 1873
30000	Prussian Mining & Ironworks, c. i. t.	30 00	—	—	23 1 1.	1 11 1.	Nov. 1876
10000	Port Phillip, c. i. Victoria	20 00	—	—	1 8 0.	0 1 0.	Nov. 1876
64000	Richmond Consols, c. i. Nevada	1 00	—	—	3 9 0.	0 7 6.	Oct. 1876
40000	Santa Barbara, c. i. Brazil	5 00	—	—	0 3 9.	0 13 0.	May 1877
120000	Scottish Australian Mining Co., c. i.	1 00	—	—	15 0 0.	—	—
112500	Sierra Buttes, c. i. California	2 00	—	—	1 15 0.	0 2 0.	Oct. 1876
40000	South Aurora, c. i. Nevada	8 00	—	—	0 14 2.	0 2 0.	Oct. 1876
2 35000	St. John del Rey (25 stock and multiples dealt in)	250 270	—	—	0 11 6.	0 10 0.	May 1874
2 000	Tolima, c. i. Colombia	5 00	—	—	0 11 6.	0 10 0.	May 1874
20000	Victoria, c. i. Australia	1 00	—	—	12 0 0.	per an	July 1876
15000	Western Andes, c. i. New Granada	1 00	—	—	1 4 0.	0 8 0.	April 1877
21200	W. Prussia (5000 pref. sh. 10% paid)	10 00	—	—	—	—	—

NON-DIVIDEND FOREIGN MINES.

Shares.	Mines.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
20000	Anglo-Australian, c. i. Victoria	2 10 0	—	—	—	—	—
5000	Anguilla Phosphate, c. i. India (4000 issued)	10 00	—	—	—	—	—
12000	Argentine, c. i. Argentine Republic	5 00	—	—	—	—	—
10000	Australian Central, c. i. (also 5000 deferred shares)	1 00	—	—	—	—	—
3000	Bellavista, c. i. Peru (210 shares)	10 00	—	—	—	—	—
30000	Blue Tent, c. i. California	5 00	—	—	—	—	—
50000	Cesena Sulphur Company, Romanga, Italy	10 00	—	—	—	—	—
15000	Chontales, c. i. Nicaragua	2 00	—	—	—	—	—
15000	Condes of Chila, c. i.	8 00	—	—	—	—	—
35000	Exchequer, c. i. California	6 00	—	—	—	—	—
40000	Holcombe Valley, c. i. California	1 00	—	—	—	—	—
8000	Hornachos, c. i. Spain	1 00	—	—	—	—	—
12000	Hultafall, c. i. Orebro, Sweden	10 00	—	—	—	—	—
30000	Imperial Brazilian Collieries, Brazil	5 00	—	—	—	—	—
20000	I. K. L., c. i. California	1 00	—	—	—	—	—
50000	Javali, c. i. Nicaragua	1 00	—	—	—	—	—
3500	La Mancha, c. i. Newfoundland	2 00	—	—	—	—	—
12000	Lanestosa, c. i. Vizcaya, Spain (22 shares)	10 00	—	—	—	—	—
75000	Malabar, c. i. Colombia (2185 issued)	1 15 0	—	—	—	—	—
40000	Malpasco, c. i. Colombia (7400 pref. shares, fully paid)	1 00	—	—	—	—	—
12000	Menzenberg, c. i. Hannover, Germany	1 00	—	—	—	—	—
4588	New Benoe, c. i. Germany	8 00	—	—	—	—	—
80000	New Quebrada, c. i. Venezuela	5 00	—	—	—	—	—
30000	New Zealand Kapanga, c. i. Coromandel	5 00	—	—	—	—	—
40000	Panuco, c. i. Chile (preference shares)	4 00	—	—	—	—	—
80000	Pentaneas United, c. i. Italy	4 00	—	—	—	—	—
80000	Providencia and New Rosario, c. i. Mexico	3 00	—	—	—	—	—
80000	Rio, c. i. Colombia (40000 issued)	1 00	—	—	—	—	—
2,151,000	Rio Tinto, c. i. Huelva, Spain	1 00	—	—	—	—	—
100000	Rosario Grande, c. i. Brazil (21 shares)	Stock	—	—	—	—	—
25000	Rosario Grande, c. i. Brazil (21 shares)	0 19 0	—	—	—	—	—
25000	Rosario Grande, c. i. Brazil (21 shares)	0 19 0	—	—	—	—	—
10000	Silver Plume, c. i. Colorado	2 00	—	—	—	—	—
30000	Tecoma, c. i. Utah	1 00	—	—	—	—	—
20000	Thornhill Reef, c. i. Australia	10 00	—	—	—	—	—
43174	United Mexican, c. i. Mexico	1 00	—	—	—	—	—
14000	Utah, c. i. Utah	28 15 8	—	—	—	—	—
15000	Yorke Peninsula, c. i. South Australia	5 00	—	—	—	—	—
40000	Yorke Peninsula, c. i. South Australia	1 00	—	—	—	—	—

Have made calls since last dividend was paid.

FOREIGN AND MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS.

CLOSING PRICES.				CLOSING PRICES.			
Argentine, 1868, 6 per cent.	54	66		Foreign and Col. Gov. Trust, 6 p. cent.	60	65	
Brazilian, 1868, 6 per cent.	21	22		Do., 8 per cent., 2d issue	45	50	
Chilian, 1868, 7 per cent.	94	96		Do., 9 per cent., 3d issue	45	50	
City of Providence, 6 p.c. coupon bonds	100	102		Do., 1872, 4th issue	45	50	
Egyptian, 1868, 7 per cent.	97	99		Do., 1873, 5th issue	45	50	
Do., unified debt, scrip	41	41	41	Peruvian, 1870, 6 per cent.	12	13	
Do., 7 per cent., R. M. L.	71	74		Do., 1872, 6 per cent.	11	12	
Do., 9 per cent., R. M. L.	43	45		Russian, 5 1/2 per cent., L. Mort.	67	72	
Do., 7 per cent., R. M. L.				Spanish, Quicksilver Mort. 6 p. cent.	61	68	
				United States Mort. 10 p. cent.	100	100	